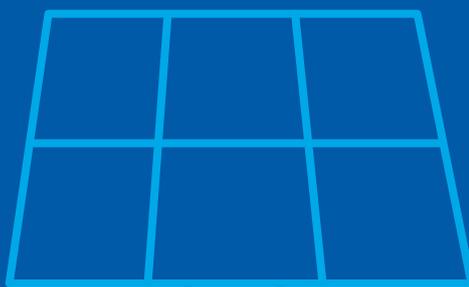
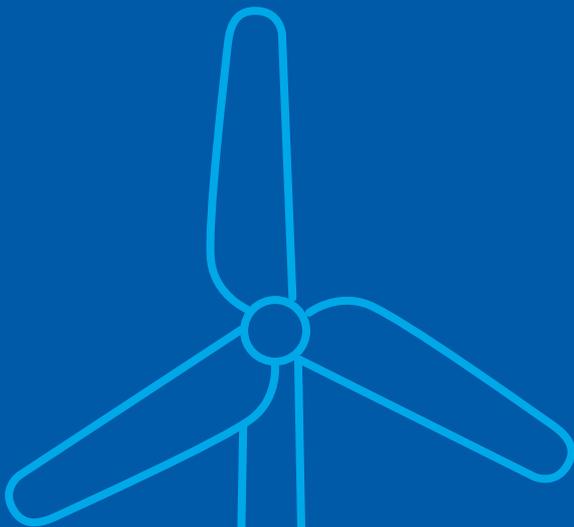


DREES & SOMMER GROUP

# ANNUAL REPORT

# **2021**



**DREES &  
SOMMER**

# GROUP OPERATING RESULT 2021

## PROFIT AND LOSS STATEMENT

	(in euros)	
1. Revenues	530,963,204	
2. Change in work in progress	39,529,439	
3. Other operating income	3,980,938	574,473,581
4. Expenditure for purchased services	71,596,758	
5. Personnel expenses	337,101,654	
a) Wages and salaries	294,711,980	
b) Social security costs and pension fund	42,389,673	
6. Depreciation	12,238,908	
7. Other operating expenses	83,398,407	504,335,726
8. Income from shareholdings	-79,122	
9. Income from other securities and from long-term loans	427,024	
10. Interest and other expenses	1,651,172	-1,303,269
<b>11. Operating result</b>		<b>68,834,585</b>
12. Taxes on income and earnings	22,070,771	
13. Other taxes	400,176	22,470,947
<b>14. Net income</b>		<b>46,363,638</b>
15. Shares held by other shareholders	-61,529	
16. Profit brought forward less dividends	19,952,342	
17. Changes in equity as the result of purchase or sale of own shares	-3,566,007	
<b>18. Group balance sheet profit</b>		<b>62,688,444</b>

## PROFIT AND LOSS STATEMENT

Group sales grew by 57.3 million euros to 574.5 million euros (prior year: 517.2 million euros). Expenditure rose by 45.8 million euros to 504.3 million euros in the year under review (prior year: 458.5 million euros). Operating profit rose by 11.6 million euros to 68.8 million euros, with net income of 46.4 million euros.

## BALANCE SHEET

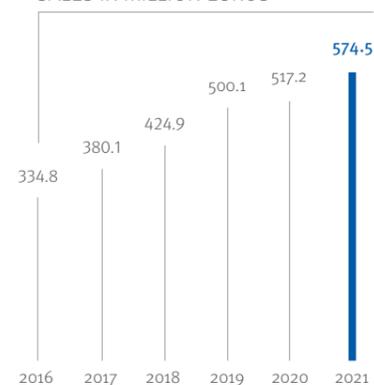
The reconciliation of the retained profit of 62.7 million euros to equity, together with the subscribed capital, the capital reserves and the retained earnings, results in equity of 100.9 million euros. The equity ratio is 28.2 %. Accruals for pensions, taxes and variable remuneration rose by 7.7 million euros to 100.6 million euros. Liabilities, such as for suppliers, subcontractors and taxes, increased by 17.8 million euros to 46.4 million euros and advance payments received on orders rose by 31.0 million euros to 86.3 million euros due to invoice timing. Liabilities to banks increased by 10.3 million euros to 16.3 million euros. In 2021, further profit participation rights were issued as part of the employee participation scheme. These are presented as bonds in the amount of 7.2 million euros.

Overall, total assets for 2021 amounted to 357.9 million euros (prior year: 281.6 million euros).

## BALANCE SHEET

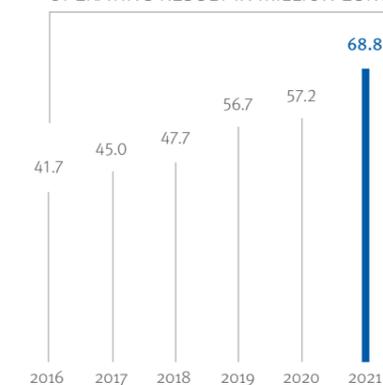
	(in euros)	
<b>ASSETS</b>		
<b>A. Fixed assets</b>		
I. Intangible assets	23,504,468	
1. EDP software, licenses	10,356,342	
2. Good will resulting from capital consolidation	13,148,127	
II. Tangible assets	55,086,638	
1. Land, rights equivalent to real property rights, and buildings	26,448,379	
2. Other assets, operating equipment, fixtures and fittings	24,142,554	
3. Payments on account and tangible assets under construction	4,495,706	
III. Financial assets	5,371,644	
1. Shareholdings	4,077,976	
2. Other securities lending	1,293,668	
<b>B. Current assets</b>		
I. Inventories	0	
1. Work in progress	742,022,162	
./. Advances received	-742,022,162	
II. Receivables and other assets	115,237,671	
1. Trade receivables	94,640,567	
2. Receivables from shareholdings	374,932	
3. Other assets	20,222,172	
III. Securities	11,109,790	
1. Other securities	11,109,790	
IV. Checks, cash on hand, cash in banks	138,681,956	
<b>C. Deferred income (other)</b>	<b>4,504,697</b>	
<b>D. Prepaid taxes</b>	<b>4,421,000</b>	
<b>E. Positive difference from asset allocation</b>	<b>0</b>	
<b>Balance sheet total</b>	<b>357,917,865</b>	

## SALES IN MILLION EUROS



	(in euros)	
<b>LIABILITIES</b>		
<b>A. Equity</b>		
I. Subscribed capital	13,222,286	
less nominal value of treasury shares	-315,522	
II. Capital reserves	24,692,739	
III. Revenue reserves	98,104	
IV. Net income	62,688,444	
V. Change in equity due to exchange rate difference	633,000	
VI. Minority interests	-98,114	
	<b>100,920,937</b>	
<b>B. Accruals</b>		
1. Accruals for pensions	3,167,164	
2. Provisions for taxation	21,357,321	
3. Other accruals	76,064,101	
	<b>100,588,586</b>	
<b>C. Liabilities</b>		
1. Bonds	7,218,799	
2. Liabilities to financial institutions	16,300,000	
3. Payments received on account of orders	86,265,431	
4. Trade payables	16,747,583	
5. Liabilities to shareholdings	0	
6. Other liabilities	29,639,477	
	<b>156,171,290</b>	
<b>D. Deferred income (other)</b>		<b>237,053</b>
<b>Balance sheet total</b>	<b>357,917,865</b>	

## OPERATING RESULT IN MILLION EUROS



574.5  
MILLION EUROS  
SALES

68.8  
MILLION EUROS  
OPERATING  
RESULT

28.2 %  
EQUITY RATIO

MORE THAN  
4,500  
EMPLOYEES

51  
INTERNATIONAL  
LOCATIONS



# CONTENTS

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68.8  
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4,500  
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51  
INTERNATIONAL  
LOCATIONS



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Drees & Sommer's new innovation  
building OWP12 is a unique showcase  
building for a wide range of future  
technologies.



**14**  
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AND CO<sub>2</sub>-FREE ENERGY SUPPLY  
It is imperative that our civilization  
becomes one that no longer  
produces CO<sub>2</sub> emissions. To achieve  
this, we must optimize every sector.



**42**  
TEMPORARY VENUE FOR EUROPE'S  
LARGEST CULTURAL CENTER



The temporary venue Gasteig HP8  
had to be ready in time for the  
Isarphilharmonie's opening concert.

**46**  
ALLIANZ ACQUIRES RENTAL  
RESIDENTIAL UNITS IN SPAIN  
In the lead-up to the acquisition  
decision, a Drees & Sommer team  
examined technical, environmental  
and digital aspects of the properties.

**62**  
BIM KEEPS COLOGNE RAIL ON  
TRACK



Ensuring the safety and user-  
friendliness of light rail stations is  
a current task of Drees & Sommer  
infrastructure experts.

**90**  
HOT-DIP GALVANIZING LINE  
FOR THYSSENKRUPP  
This move is the company's response  
to increasing demand for high-quality  
and high-strength strip steel for the  
automotive industry.

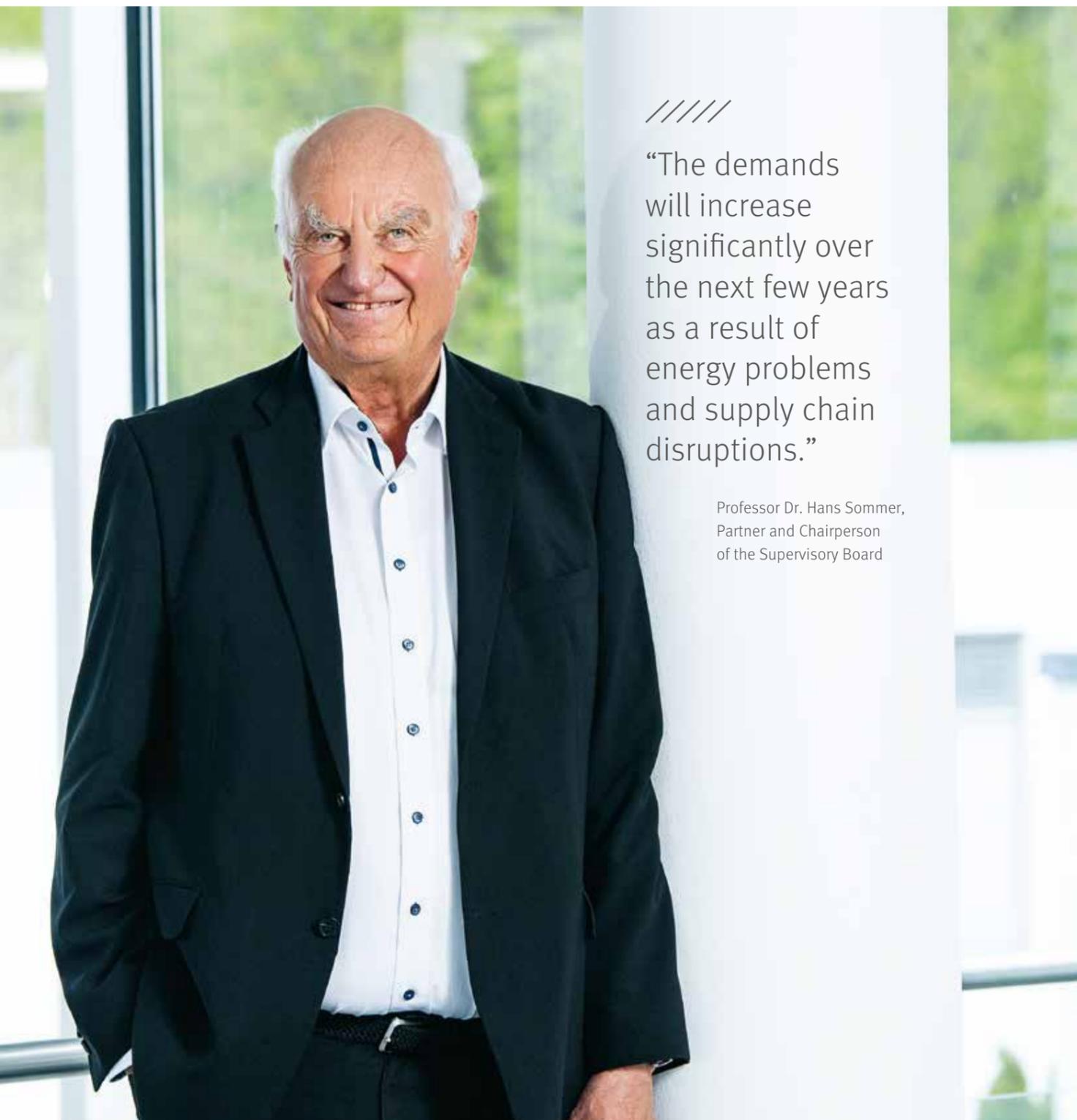


**106**  
NEW WORK ENVIRONMENT  
FOR BEIERSDORF  
The new Basel office is one of the  
first Beiersdorf offices to be converted  
into a dynamic work environment.



**118**  
25HOURS HOTEL IN FLORENCE  
OPENS ON TIME FOR ITS GUESTS  
The project includes a new  
construction part and the renovation  
of the historical inventory. The  
location in the historic center was  
particularly challenging.

The Supervisory Board of Drees & Sommer: Chairperson Professor Dr. Hans Sommer (photo), Deputy Chairperson Dr. Johannes Fritz as well as Dr. Bernd Gaiser, Dr. Jürgen Laukemper, Yvonne Allner and Eva Dietl-Lenzner.



//////  
“The demands will increase significantly over the next few years as a result of energy problems and supply chain disruptions.”

Professor Dr. Hans Sommer,  
Partner and Chairperson  
of the Supervisory Board

Drees & Sommer SE had another successful year in 2021 and, on the basis of the strategy of caution adopted in 2020, it managed to ensure the success of its clients.

The Supervisory Board performed the duties required of it by law, the articles of association and the rules of procedure in 2021 as in other years. In the meetings on March 16, May 19, June 29, July 5, October 19 and December 6, 2021 we discussed the Executive Board's reports and the company's performance along with strategic matters. Aside from Supervisory Board meetings, the Chairperson of the Supervisory Board had discussions with the Executive Board every three weeks as well as extraordinary meetings.

Sales increased by EUR 57.3 million to EUR 574.5 million. Earnings grew by EUR 11.6 million to EUR 68.8 million. Further reserves were built up as a precautionary measure in response to the critical Covid-19 situation and the increasing uncertainty caused by the invasion of Ukraine. Overall, Drees & Sommer performed very well in the market again and also consolidated its position internationally in 2021.

#### Annual Financial Statements and Consolidated Financial Statements for 2021

The Executive Board prepared the annual financial statements and the consolidated financial statements of Drees & Sommer SE in accordance with the German Commercial Code (Handelsgesetzbuch – HGB).

The annual financial statements and consolidated financial statements for 2021, along with the management reports, were audited by Baker Tilly, the company appointed by the general meeting of shareholders. Baker Tilly conducted the audit in compliance with Section 316 et seq. of the German Commercial Code and the German standards for the audit of financial statements laid down by the German Institute of Auditors (Institut der Wirtschaftsprüfer – IDW). The auditors gave their unqualified approval to the annual financial statements and the consolidated financial statements.

The annual financial statements and the management report, the consolidated financial statements and Group management report, the audit reports and the Executive Board's proposal for the appropriation of net retained profits of Drees & Sommer SE were submitted to all members of the Supervisory Board in good time.

We reviewed these documents and discussed them in our meeting on May 16, 2022 in the presence of the auditor, following which we approved the auditor's reports. We also approved the annual financial statements and consolidated financial statements and the management reports prepared by the Executive Board in our meeting on May 16, 2022.

We discussed and approved the Executive Board's proposal that a dividend of EUR 2.36 and an extraordinary dividend of EUR 0.45 per share will be paid out of Drees & Sommer SE's net retained profit of EUR 59.6 million. The remaining amount will be carried over to the new accounting period. The resolution will be proposed to the general meeting of shareholders for approval. Our decision took into account the company's current financial and earnings position, the medium-term financial and investment plan and the interests of the shareholders.

Izabella Danner left our company on May 31, 2021 at her own request. Marc Schömbbs was appointed to the Executive Board on January 1, 2022. On July 1, 2021, Dr. Jürgen Laukemper and Yvonne Allner joined the Supervisory Board.

#### Outlook for the Coming Fiscal Year

In consultation with senior management, and with the approval of the Supervisory Board, the Executive Board has taken financial and staffing measures in addition to continuing the weekly reporting from 2021, in order to deal with the impact of the pandemic internally if possible and without having to lay off any staff.

Stuttgart, Germany, May 20, 2022

Hans Sommer



Partners and Executive Board members from left: Dierk Mutschler, Steffen Szeidl (Speaker of the Executive Board), Marc Schömbs

The term resilience comes from Latin: the verb *resilire* means to bounce back, to recoil. Resilience refers to the ability not to break down in the face of a crisis, to cope with it, and to prove adaptable and robust. Several factors contribute to the resilience of Drees & Sommer, including a broad portfolio of services, a client structure that is at least broadly diversified across all sectors, and the high degree of flexibility on the part of our employees.

This is also reflected in the results. Sales increased by 11 percent year-on-year to EUR 574.5 million, while the operating result of EUR 68.8 million was 20 percent above the previous year's level.

#### Strong Alliances for a Digital, Climate-Compatible Transformation

What constitutes our resilience: instead of working behind closed doors, or placing one's hopes in the crystal ball, a strong will to innovate and change is part of our corporate culture. Through joint research, close cooperation with promising startup companies, and with our clients and business partners, we find innovative solutions and new business models to drive forward a climate-friendly and digital transformation of the real estate industry. With this in mind, we strengthened our position last year with international and national investments that will help us move forward. This includes the British construction consultancy AA Projects, with which we are continuing to grow in the United Kingdom. Our particular focus is on consulting services relating to modular, ecological and smart buildings. Our partnership with Die Werkbank IT GmbH is enabling us to further expand our digital expertise, especially in the German-speaking area (Germany, Austria and part of Switzerland). Based in the Austrian capital of Vienna, the IT company is a provider of high-quality building information modeling (BIM) solutions. To boost the range of services related to new work and new working environ-

ments, we brought the Hamburg-based general planning and consulting company vonhaveprojekt GmbH on board.

Drees & Sommer also recently joined the corporate responsibility initiative United Nations Global Compact. This makes it part of a network of over 12,000 companies worldwide that are pursuing the goal of achieving a more sustainable and fairer global economy. The focus is on ten principles covering human rights, labor standards, environmental protection and combating corruption. This underlines our commitment to responsible corporate governance with an ecological and social orientation, as also required by the taxonomy of the European Union (EU) and environmental, social and corporate governance (ESG) criteria. After all, if we want to apply high environmental and social requirements in our client projects, we ourselves must put this into practice.

#### Creating Blueprints for Sustainable Construction

Practice what you preach! We followed this maxim in the new office building for our own use on the Drees & Sommer campus in Stuttgart, which we opened last year. The net plus energy building was designed to be recyclable as far as possible based on the Cradle to Cradle® approach, while generating more energy than it consumes in operation. As a consulting firm specializing in construction and real estate, the standards for our own project



Ready for the future: the Drees & Sommer innovation building OWP12

are particularly high, of course. Not only our specialists in civil and industrial engineering need to rise to the challenge. We also employ interdisciplinary experts from different fields such as chemistry, design, psychology or ecology in the construction projects we supervise. And as it is a highly demanding task to harmonize these requirements in our new building, called OWP12 (from the address: Obere Waldplätze 12), so we are all the more proud of the result. Winfried Kretschmann, Minister-President of the German federal state of Baden-Württemberg, and Stuttgart's Lord Mayor, Dr. Frank Nopper, hailed the innovative Drees & Sommer building as a blueprint for climate-friendly construction, and an inspiration for the entire buildings sector.

We put new work into practice not only in the innovative building OWP12, but at all locations; we also apply it to our client projects. That is because even before Covid-19, a trend was emerging in our work environment that the pandemic has accelerated. The one workplace no longer exists: it is supplemented at least by remote working from home, and sometimes also by the mobile office or co-working spaces. The workplace designs that we develop offer what a remote workstation cannot (always) provide: space for concentration, communication and cooperation in individual teams. Work from office – work from home – or, as we have also put it in our new guideline for employees: work from everywhere, if project business allows it. We rely on the personal responsibility of our colleagues and on trust as a basis for jointly meeting the challenges posed by the new world of work.

#### Indispensable Must-Have: Climate-Compatible Recycling-Enabled Construction, Revitalization and Operation

For a climate-conscious generation, new work means equally that one's own activity has an impact. Drees & Sommer has long answered the question of why by defining its own purpose: Uniting opposites to create a world we want to live in. For us, this means that the consequences of climate change, scarce resources, digital transformation, economic shocks such as the Covid-19 pandemic, or geopolitical crises are aspects we bear in mind at Drees & Sommer for our clients when we are working on our cities, neighborhoods, and buildings.

In the sphere of construction and real estate, we have made a name for ourselves in the transition to a climate-compatible economy, including decarbonization of the heating in existing buildings, resource consumption in new construction or conversions, and energy efficiency in operation. For example, we have long been advising cities, local authorities and companies on climate adaptation strategies, reduction of their carbon footprint and the circular economy. As a pioneer right from the start, we realize urgently needed strategies such as urban mining and Cradle to Cradle® (Our „Strategies for a safe and CO2-free energy supply“ can be found starting on page 14). Our goal is to make high-quality reuse of the hidden but recyclable treasures that lie dormant in our cities and real estate. We aim to integrate recycling at the planning, construction and demolition stages, and to avoid waste. To do so, we are implementing landmark and pilot projects to create comprehensive building resource registers at the level of cities, towns and municipalities. We are also developing digital building materials passports (BMPs) at the level of individual properties, as envisaged by the new German government in its coalition agreement of the governing parties.

These political pushes alone make it clear: building, renovating and operating property in a climate-compatible and recyclable way has long since ceased to be a nice-to-have, but has become an indispensable must-have. Those who do not move themselves will be moved – by regulation, or by social and economic pressure. The requirements of the EU taxonomy and ESG criteria should also be mentioned here. Failure to comply with them becomes a financial risk. In addition to the risk of a stranded asset for the investor side, there is also a risk of disadvantages in refinancing for the other players in the construction and real estate industry if this is not taken into account.



“Drees & Sommer has long answered the question of why by defining its own purpose: Uniting opposites to create a world we want to live in.”

#### Consistently Pursuing the blue way

Combining ecology and economy in the construction and real estate projects we are involved in, and consistently pursuing our own blue way, will also determine our future actions. In the coming years, we will also be addressing the question of how we can make established structures in cities more sustainable. In order to limit soil sealing and urban sprawl, it is necessary to promote the compact city even more: living, work and leisure are coming together. This means that more mixed-use multi-story buildings need to enter the urban space. Our international and interdisciplinary Highrise team of experts develops solutions for realizing these properties in such a way that they are green, smart and offer a high quality of life.

In addition to these long-term strategic tasks, as a resilient company we will continue to succeed in providing our clients with maximum support in the event of unforeseen developments. The war in Ukraine has further exacerbated supply chains and material shortages that were already impacted by the pandemic. Rising inflation and energy bottlenecks are additional factors. Our choke point management task force is already working on solutions to ensure that the construction projects we assist can still be successfully completed.

All this is only possible with the high motivation, adaptability and resilience of our employees. They are what makes us successful. Our clients also knew at all times last year that their construction and real estate projects are in good hands with Drees & Sommer, despite difficult pandemic conditions. You can rely on us. Enormous demands have been made on our colleagues, deserving the highest recognition. The one-off Covid bonus payment is intended as a small token of our appreciation in this respect. We would like to take this opportunity to expressly thank all our colleagues for their tireless commitment, team spirit, loyalty and outstanding performance.

  
Steffen Szeidl      Dierk Mutschler      Marc Schömbbs

## DREES &amp; SOMMER PARTNERS

PROF. DR. MICHAEL BAUER, MARTIN BECKER, MIRCO BEUTELSPACHER, FRANK BORNMANN, JÜRGEN BRANDSTETTER, CLAUS BÜRKLE, MICHEL DE HAAN, KLAUS DEDERICH, SIMON DIETZFELBINGER, MANUEL DORN, JÖRG EWALD-LINCKE, CHRISTOPH GAWLIK, PROF. PHILLIP W. GOLTERMANN, PROF. DR. THOMAS HARLFINGER, THOMAS HÄUSSER, SASCHA HEMPEL, STEFAN HESELSCHWERDT, KLAUS HIRT, THOMAS HOFBAUER, THOMAS JAISSE, BJÖRN JESSE, DIRK KAHL, SASCHA KILB, DR. MARKUS KOCH, BORIS MATISIC, DR. PETER MÖSLE, DIERK MUTSCHLER, RAINER PREISSHOFEN, FRANK REUTHER, RALPH SCHEER, ANDREAS SCHELE, MARC SCHÖMBS, DANIEL SEIBERT, PROF. DR. HANS SOMMER, PHILIPP SPÄTH, STEFFEN SZEIDL, PATRICK THEIS, VEIT THURM, GABRIELE WALKER-RUDOLF, MARKUS WEIGOLD, JÖRG WOHLFARTH, RINO WOYCZYK



Drees & Sommer's commitment to sustainable corporate development also builds on the United Nations Sustainable Development Goals (SDGs). Many of the Drees & Sommer projects described in this annual report are aligned with one or more SDGs.

**WE SUPPORT**



//////  
 “As shareholders of Drees & Sommer SE, the Partners back the company's clear sustainability course. Despite all our innovative strength, this requires continuity in our approach – as reflected in the long-term stable development of the company.”

Drees & Sommer is committed to sustainable corporate development that reconciles long-term economic success with ecological and social goals. As a Beneficial Company, our goal is to give back more to the environment and society than we take through our business activities.

Drees & Sommer commitment builds on the United Nations Sustainable Development Goals (SDGs) as laid out in the 2030 Agenda for Sustainable Development. To underscore the importance the company attaches to its own sustainability goals, in 2021 Drees & Sommer joined the United Nations Global Compact Initiative, which supports companies worldwide in promoting responsible corporate governance. The organizations

participating in the initiative commit to ensuring that their activities and strategies are aligned with the ten principles in the areas of human rights, labor standards, the environment and corruption prevention. In an annual progress report (Communication of Progress, CoP), the companies report on the status of implementation and their activities to promote sustainable development.

Based on our extensive efforts in recent years to reduce greenhouse gas emissions, we also joined the Science Based Target Initiative (SBTi) in 2021. This ensures that Drees & Sommer's corporate climate strategy is aligned with the requirements of the Paris Climate Agreement 2015.

# OWP12: READY FOR THE FUTURE

Drees & Sommer's new innovation building OWP12 on the Stuttgart campus is more than 'just another office building'. It is a unique showcase building for a wide range of future technologies and the company's multifaceted service portfolio.

Since December 2021, Drees & Sommer's new energy-plus building in Obere Waldplätze 12 (OWP12) has been demonstrating that climate protection and real estate are an excellent strategic fit. Drees & Sommer invested some 22 million euros in the ecological smart office building on its campus in Stuttgart-Vaihingen. Built over two years and completed on schedule and within budget, the building accommodates around 200 employees.

OWP12 addresses the challenges of climate change and is a perfect model for energy transition in the building sector. As far as possible, our own experts designed the energy-plus building to be recyclable and to generate more energy than it consumes during operation. A newly developed, high-insulating facade design, photovoltaic systems on the roof and on the southern facade, geothermal energy from boreholes and a planted northern facade contribute to its positive lifecycle assessment.

Scan the QR code for more information about the OWP12 innovations.





The lobby area is characterized by clear colors and geometrical shapes.



Videos covering all aspects of our construction project are available in this YouTube playlist.



“The new OWP12 building is another highlight, particularly in the area of sustainable construction. It is great how Drees & Sommer is leading the way in innovative and climate-friendly construction.”

Dr. Frank Nopper,  
Lord Mayor of Stuttgart



The canteen offers employees relaxed retreats.



“Flagship projects like the Drees & Sommer new premises demonstrate how a transition to a sustainable and climate-conscious culture in the construction sector can be achieved.”

Winfried Kretschmann,  
Minister-President of Baden-Württemberg

The Cradle to Cradle® principle (C2C) was applied to aspects such as recyclability, absence of pollutants and easy deconstruction of the building. This will allow most building materials to be either recycled without downcycling or returned to a biological cycle when the building is demolished at the end of its lifecycle. A material passport provides information about the materials used and their chemical properties.

OWP12 also sets new standards in digitization: Ideas, designs, simulations, schedules, specifications, budgets, building permits – all parties involved had to work together perfectly to coordinate all of these elements. That’s why the company used Building Information Modeling (BIM), a digital planning method – in addition to modularized components – to ensure smooth project execution. This allowed the building to be inspected from top to bottom in the ‘digital twin’ before the first excavator even arrived on site. The BIM specialists resolved any planning or construction issues in the digital model, thus avoiding delays on the construction site.

A whole range of digital technologies is also used for operation of the building. These make life easier for employees, customers and service providers by providing features such as access control, conference room booking and automated setting of temperatures and lighting in offices.



The PV facade turns OWP12 into an energy-plus building.

# STRATEGIES FOR A SAFE AND CO<sub>2</sub>-FREE ENERGY SUPPLY

Our energy supply and our industrial processes are still based on coal, oil and gas.

It is imperative that our civilization becomes one that no longer produces CO<sub>2</sub> emissions. To achieve this, we must optimize every sector – with green electricity and the help of hydrogen.

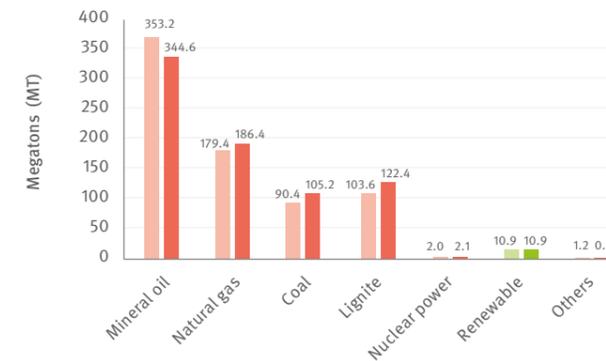
This transformation that is now ahead of us is at least as important as the previous three industrial revolutions. And the issue of supply reliability that the war in Ukraine and its virtually unforeseeable consequences have raised has given this transformation an additional dimension.



## Our Current Position

By phasing out the nuclear power plants – which is certainly expedient in the long term but painful in the short term – Germany has put itself under extreme pressure in comparison with some of its neighbors. Our greenhouse gas emissions are thus increasing again, after a significant decrease in the previous year. In 2021, approximately 772 million tons of greenhouse gases ended up in the atmosphere. The waste disposal industry is not included in this figure. This is around 32 million tons more than in 2020.

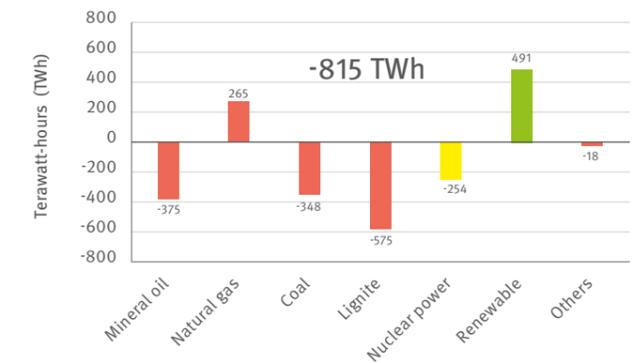
## CO<sub>2</sub> emissions in Germany in 2020 and 2021



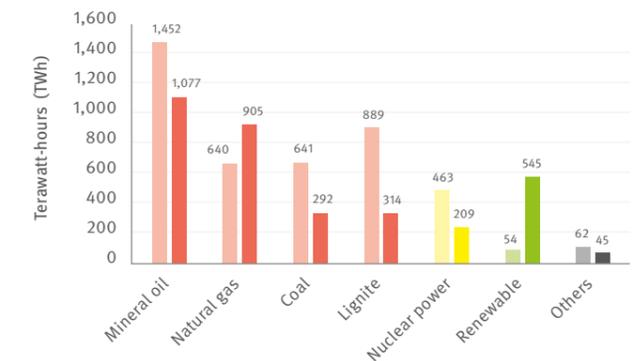
An increase in the previous year was seen in the energy sector in particular, which recorded a rise of 27 million tons of CO<sub>2</sub> equivalents. This is linked to a higher demand for electricity. To meet this need, Germany increasingly turned to coal because the gas prices were on the rise and the generation of electricity from renewable energy sources stagnated as a result of poor wind conditions.

And if the supply of Russian gas was to stop – for whatever reason – Germany would have an enormous problem. And not only with the CO<sub>2</sub> emissions but with the energy supply in general! The energy consumption in our country has reduced by 815 TWh since 1990. Most notably, coal burning, which has a particularly high carbon impact, decreased sharply, whereas natural gas and renewable energies recorded an increase. This was generally a positive development, a step in the right direction, but one that did not go anywhere near far enough. We simply did not do enough, and we are now paying the price.

## Change to the proportions of primary energies, from 1990 to 2022



## Development of primary energies, from 1990 and 2021

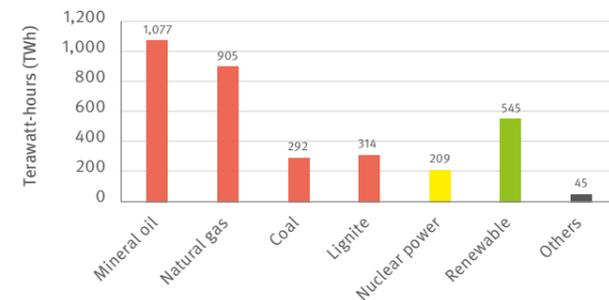


There is no other option than to significantly raise the pace at which we develop renewable energies. Germany must manage to expand its present capacities many times over in order to increase the proportion of renewable energies used for electricity generation to 80 percent by 2030. An impasse such as that seen in the past few years must no longer be allowed to happen.

Furthermore, the Russian war of aggression in Ukraine has dramatically brought to light how closely security and energy supply are linked. We can no longer afford to ignore this fact. It is thus imperative to quickly remove all the obstacles that stand in the way of more wind and solar power. The faster departure from fossil energy sources must include all segments – from industrial production, through the buildings sector, to mobility and agriculture. Keeping a balance in terms of social considerations is key.

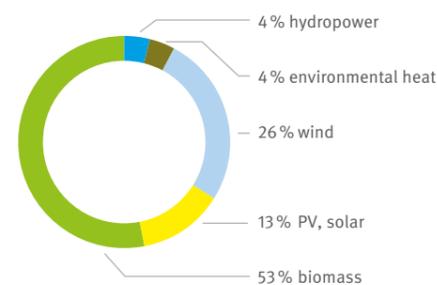
At the moment, fossil energies still dominate, but the proportion of natural gas has increased somewhat in comparison. Overall, the mix of primary energy in 2021 is as follows.

Primary energies in Germany in 2021



On the positive side, renewable energies now account for 16 percent of the total primary energy requirement. While this is a good achievement, the following graphic shows the massive task we are faced with if we want to replace fossil fuels entirely.

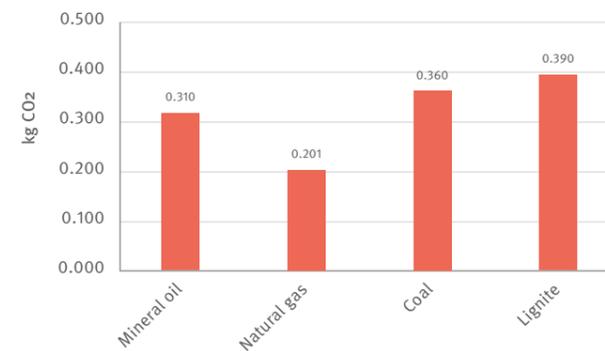
Proportion of renewable energies



As, when we look at the renewable energies more closely, it becomes clear that our overall problem is much bigger – we cannot substantially increase the proportions of biomass and hydropower without causing damage to the environment in other ways. All we thus have left are wind power and photovoltaic systems, which together only account for just under 40 percent of the renewable energies. Twelve times the amount of wind and solar electricity would be needed to replace the fossil fuels completely, not even taking into account the phasing out of the remaining nuclear power plants.

This has given rise to the idea of massively increasing the proportion of natural gas as an interim solution, rather than using mineral oil and coal. As can be seen in the following graphic, the CO<sub>2</sub> emissions per kilowatt hour are significantly lower with natural gas than with mineral oil and, in particular, coal.

CO<sub>2</sub> emissions per kWh

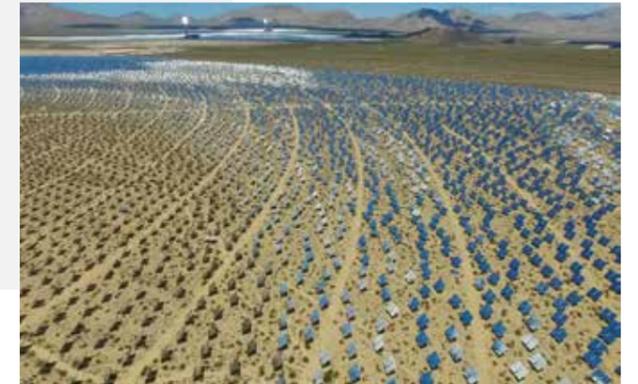


The war in Ukraine has now made these considerations extremely uncertain or even obsolete. Politicians are therefore desperately looking for ways of at least partly replacing Russian gas with alternative solutions as quickly as possible. In addition to increasing the supply of gas from Norway, another option is to source liquefied natural gas (LNG) from countries on the Arabian Peninsula, such as Qatar and the United Arab Emirates. On the other hand, environmental reasons mean that importing LNG from the fracking plants in the USA does not appear to make much sense – but this will presumably be no obstacle.

And one thing must not be forgotten; natural gas is and always will be a fossil fuel and it can – in whatever form – only be an interim solution. Therefore, in an extremely short space of time, hydrogen has become an essential driving force behind the turnaround in climate policy, in addition to power generation using wind and solar energy.

Due to the high costs, the production of hydrogen in Germany will be mainly limited to its function of storing surplus electricity from the increasingly large electricity production peaks related to wind energy and PV systems. Production from surplus heat from industry is also feasible. This hydrogen could be directly added to the natural gas without liquefaction.

*We have to alter our mindset and use all the technological know-how with an open mind to further the turnaround in climate policy.*



However, our own options for hydrogen production are limited. The picture is completely different near to large solar power stations in Southern Europe, North Africa and on the Arabian Peninsula. In these regions, there are double the number of hours of sunshine and almost double the amount of solar insolation as in Germany. There, electricity can be produced at a price that makes the production of hydrogen, including liquefaction, absolutely competitive.

The planned new German LNG terminals could thus have twofold use: as storage facilities for the liquefied gas and as the receiving ports for the hydrogen that has been liquefied in the aforementioned regions.

Totally irrespective of this, the hydrogen in question could also be used to produce methanol (for synthetic fuels) and ammonia, which could reach us via the same transportation infrastructures as the mineral oil.

There is no longer time to discuss obvious solutions again and again in interminable political debates. People of action are needed. Engineers and planners from all fields. Plant constructors from the chemical and petrochemical industries. The energy sector. The key players from the construction industry. They must all work together with the politicians to lay down the framework in just a very short space of time. Even if the situation with Russia was to eventually stabilize again, the energy transformation is needed in the long term in any case.

Alongside the emissions, the energy prices in particular are also currently increasing, which should actually speed up the transition. But conversions take time. And, in the short term at least, still higher gas prices or even supply shortages have the opposite effect. They do not make climate protection simpler; they put it at risk. As, should a lack of natural gas cause gaps in the electricity supply, the use of coal-fired power plants will inevitably increase. For example, as early as January, the coal imports in the European Union rose by more than 56 percent compared with the previous year.

And many people will be asking themselves whether the aforementioned activities will mean we will see a green economic miracle for all or rather a nasty surprise with de-industrialization and a massive loss of wealth for a large proportion of the population.

How many protesters will take to the streets to challenge all the plans or reject them totally from the outset? It is going to be very interesting.

# Optimization of the Sectors

The German Federal Government is aiming for complete decarbonization of the energy supply by 2045. By 2030, the emissions, caused by the energy industry, are to have been reduced to 175 million tons of CO<sub>2</sub> equivalents. The most important aspects are phasing out coal-fired power generation, a massive expansion of renewable energies in the areas of electricity, heat and transport and an increase in energy efficiency.

The cure-all is electrical energy, but there is one drawback – the fluctuating production of electricity when generated by the wind and the sun. We have to tap into other sources of energy that, one the one hand, store surplus electricity and also convert it into usable forms of energy for the consumer sectors. The electricity-based and CO<sub>2</sub>-free generation of green hydrogen is an indispensable step for the long-term storage of surplus electricity. Wind turbines should not be switched off just because a consumer cannot be found for the power from time to time.

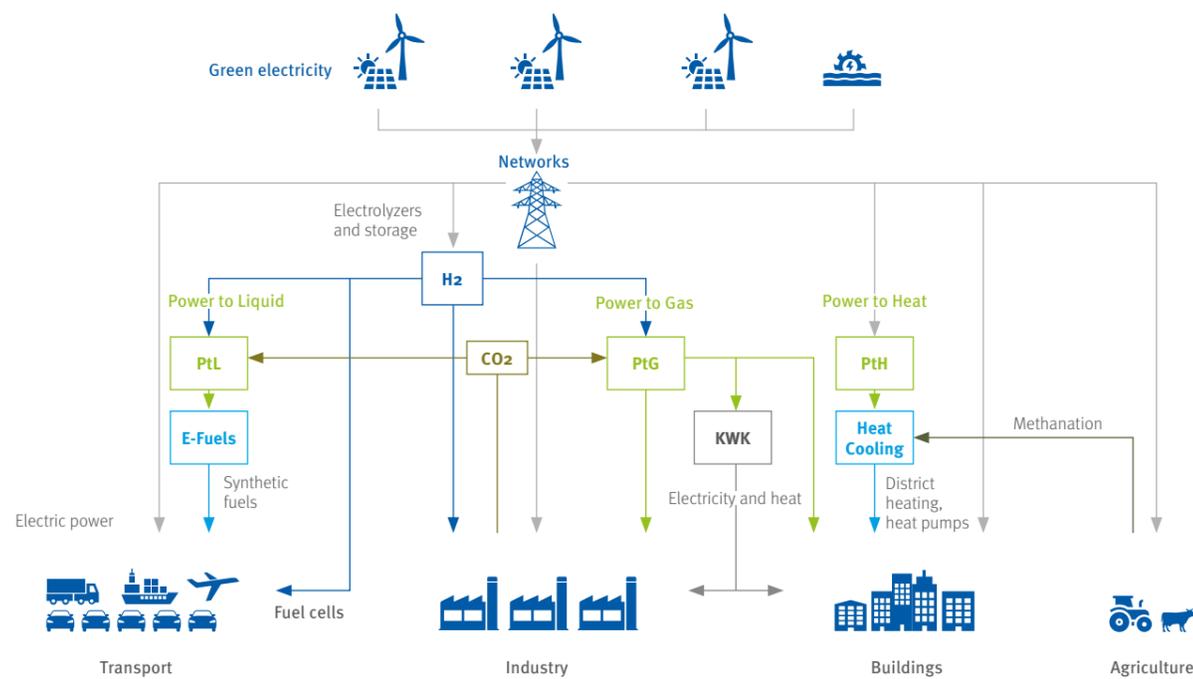
Hydrogen can either be used directly or converted into other forms of energy via power-to-x processes. This includes the following.

**Power-to-gas (PtG):** The green hydrogen can save significant amounts of CO<sub>2</sub> in the steel and chemical industries or be used for fuel cells in the transport sector – as well as for combined heat and power generation (CHP). It makes the decentral and highly-efficient production of electricity and heat CO<sub>2</sub>-free.

**Power-to-liquids (PtL):** Methanol and synthetic fuels, such as dimethyl ester and kerosene, can also be produced on the basis of hydrogen and added CO<sub>2</sub>. These e-fuels can then specifically reduce the use of fossil fuels in the transport sector.

**Power-to-heat (PtH):** The use of electricity can play an additional part in decarbonization in the heating market through the use of simple heating elements in district heating systems or the integration of heat pumps.

A complete energy system, always based on GREEN ELECTRICITY, is thus created.



Energy strategy of the future

## The Energy Sector

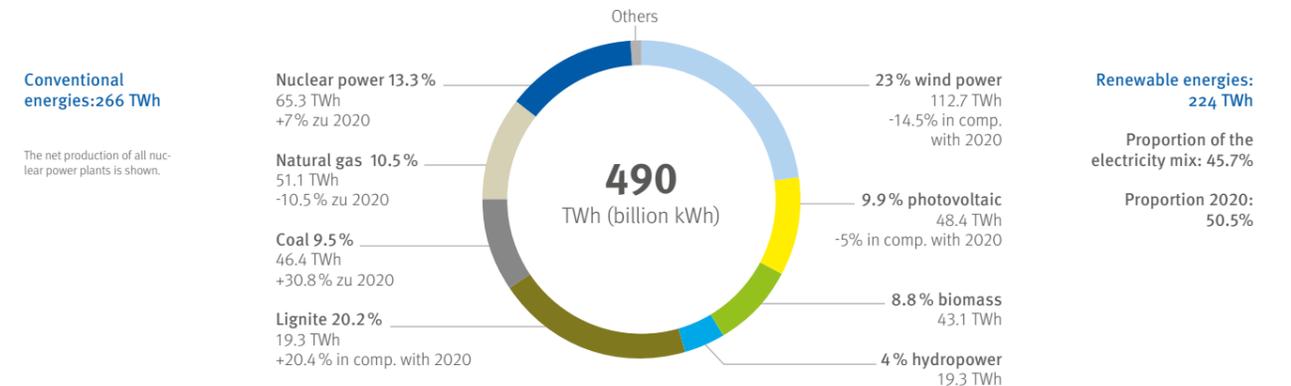
The transformation of energy generation results in a massive surge in electricity demand of other sectors. This increase is even greater as some of the fossil fuels in the consumer branches cannot be replaced by electricity at all – but by the electricity-intensive production of hydrogen or hydrogen-based energy sources, such as methane or e-fuels. By 2030, the generating power of the solar sector is thus to more than double, from approximately 45 gigawatts today to 98 gigawatts in Germany. The generating power of onshore wind energy is to increase from approximately 53 GW in 2019 to between 67 and 71 GW, and the offshore sector is to rise from 6 GW to 20 GW.

### Electricity Production

The transformation in the consumption sectors only makes sense if all the electricity comes from renewable energy. Sufficient quantities of green electricity are the basic requirement for electric vehicles, heat pumps, industrial processes and the production of green hydrogen.

Large increases are mainly possible in the wind energy (offshore and onshore) and photovoltaic sectors. Hydropower plants and biomass facilities provide a continual supply of electricity but the opportunities to expand them are comparatively limited.

Even if the electricity consumption of currently 490 TWh did not change in the next few years, the proportion of electricity from wind power and photovoltaic systems would have to more than double. However, the electricity consumption is set to increase. It will also double by 2030/2035; by 2040, net electricity generation with renewable energies of more than 1,000 TWh will probably be needed, which is 4.5 times the proportion of electricity that is generated from wind power and photovoltaic systems today. In Germany, an extensive increase in generating capacities will therefore have to take place by 2045, depending on the level of imports. The speed at which this is carried out must be approximately three times as fast. The best way to achieve this is with incentives for the general public and for companies.



**Wind and Solar Parks**

In Germany, wind parks (onshore and offshore) and solar parks will have to generate the greatest amount of electricity. But smaller, decentral systems are also important if there are enough of them.

An example of this is agrivoltaic systems on farmed fields. In 2021, the agriculture sector still used 14 percent of its area for energy crops. If farmers grow rapeseed on a one hectare field, they produce approximately 1,800 liters of biodiesel per year.

Energy content: 17,640 kWh. In the same area, a photovoltaic system can generate approximately 1,000,000 kWh of solar electricity per year – more than 55 times more. And insect-friendly wildflower meadows, pastures and vegetables flourish in the shade of the solar modules.

Solar-paneled roofs with digitally controlled energy storage are an important source of electricity and also play an important part in sector coupling with electric cars and heat pumps.



Undeveloped area PV and agrivoltaics



Photovoltaics on buildings



— Planned trunk section of the Südlink line  
 — Planned additional route of the Südlink line

SuedLink north-to-south connection

**Electricity Grid Expansion is needed**

The significant increase in renewable energies for electricity generation and the changes in the overall power plant portfolio – especially the phasing out of nuclear power and coal in Germany – result in considerable need for modifications to the electricity transmission grid. Not only the size and types of the plants are changing but also the regional distribution of the electricity generation infrastructure.

For example, in Germany, the focal points of electricity generation are clearly moving to the north, e.g., due to the construction of new offshore wind parks in the North Sea and Baltic Sea. However, the areas of highest consumption with numerous large electricity clients are still in the south and west of the republic.

The grid expansion applies to the transmission grids, i.e., the ‘electricity freeways’, as well as to the distribution grids. Existing lines have to be renewed, transmission capacities in the existing grid increased and new transmission lines built. The main challenge is line availability. Local opposition often makes it more difficult to define routes. Planning and approval processes stretch out over many years.



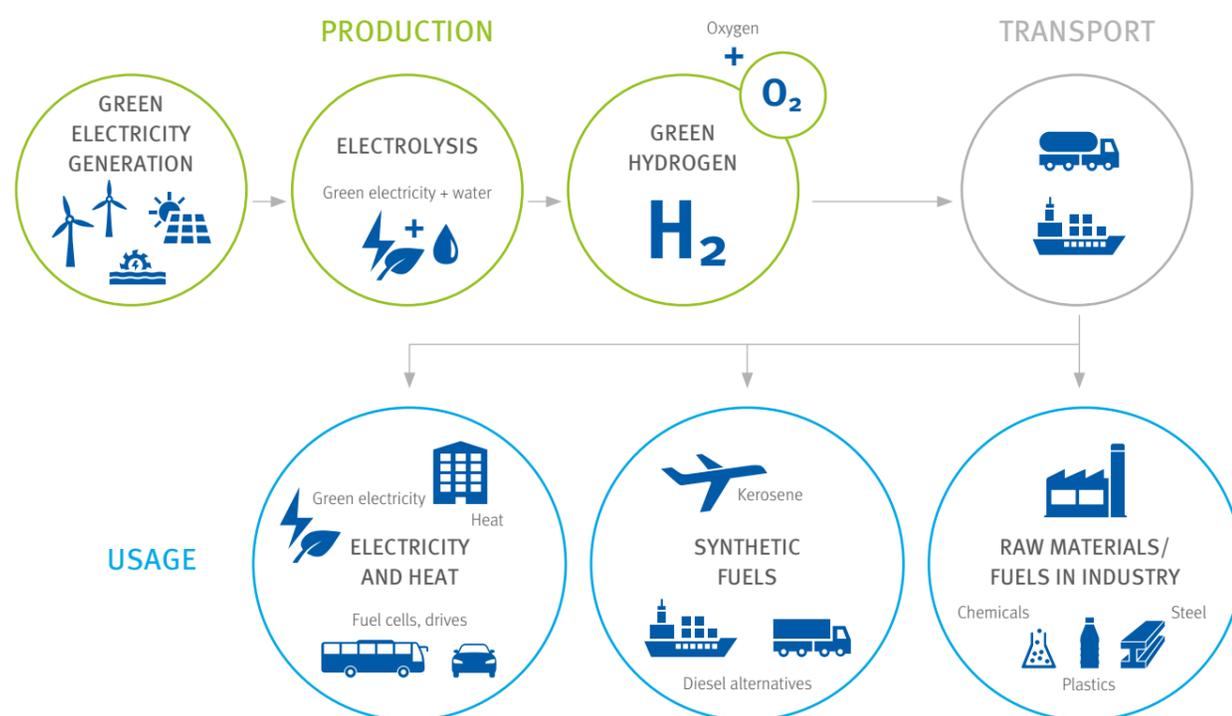
### Hydrogen – Production and Distribution

Hydrogen (H<sub>2</sub>), as an enabler and a storage medium, is playing an important role in the energy transformation. Electricity and hydrogen are the perfect combination on the journey to a net zero economy. However, the problem of the production and/or provision of the hydrogen is still to be solved. There are three options.

- 1. Decentral production at the consumer** – While transporting the energy via the existing electricity grid results in a high load on the grid, transporting does not require any new infrastructure. Nonetheless, a high number of – usually small – electrolyzers need to be installed.
- 2. Central production at the electricity producer A** – Distribution takes place via trucks or ships with high variable costs. In addition, the hydrogen must be liquefied, which requires a great deal of electricity.
- 3. Central production at the electricity producer B** – Distribution takes place via the existing gas network or a new hydrogen network, resulting in high investment and fixed costs.

Electrolysis to produce green hydrogen needs a very large amount of green electricity which is too expensive and not available in the required quantities in Germany. This situation could be helped considerably by importing hydrogen and/or green methane or methanol from Southern Europe, North Africa or the Arabian Peninsula – regions with almost four times as much usable solar energy, and where hydrogen production is considerably cheaper than in Germany.

Transporting this will be achievable and expedient in the future. Methanol can be transported in the same way as mineral oil always has been; new transport channels are being created for liquefied natural gas, and LNG terminals are being constructed.



The journey of hydrogen (German Federal Ministry of Education and Research – FONIA)

### The Industry Sector (Basic Industry)

By 2030, the greenhouse gas emissions in industry are to be gradually reduced to 140 million tons of CO<sub>2</sub> equivalents – 25.5 percent less than in 2019.

Production is to become greenhouse gas neutral. This means that process-related emissions are to be avoided, and greenhouse gas neutral energy provision is to be realized. Energy consumption must decrease; energy efficiency must be improved. Increased use of renewable energies and waste heat is needed. This can be attained by optimizing material and resource usage. Higher recycling rates significantly reduce the need for primary materials. If industry wants to avoid process-related emissions entirely, it will have to fundamentally transform all its production methods. This applies in particular to the steel, cement, lime and nonferrous metals sectors, as well as to parts of the basic chemicals industry.

#### Steel Production

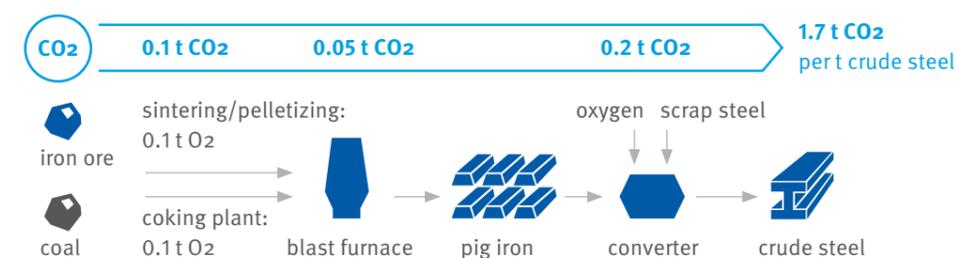
The main starting point in this context is the **transformation of primary steel production**. Industry is working on processes that reduce iron ore using hydrogen instead of, as is currently the case, carbon and then process it further.

The second element needed for lower CO<sub>2</sub> emissions is **scrap-based electric steel production**. This is a method with lower greenhouse gas emissions which is already available for approximately 30 percent of the crude steel produced. Steel and its production by-products are the starting point of numerous value chains that are based on the principles of the circular economy and can save significant amounts of CO<sub>2</sub>, especially considering that steel can be recycled, repaired and reconditioned again and again without adversely affecting quality, and it is also durable and easy to process.

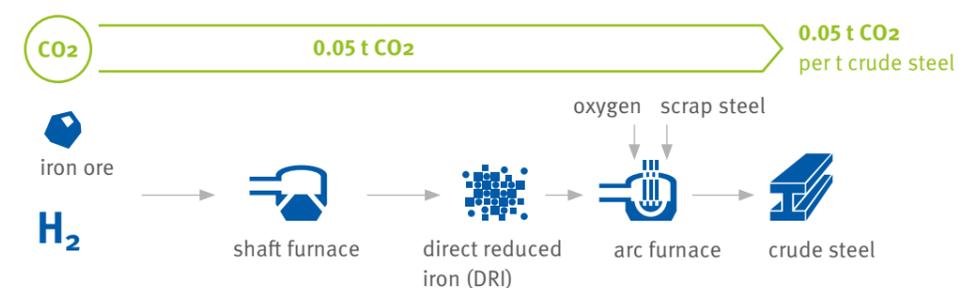
#### Cement Production

Concrete is the most important construction material in the world. Virtually no new building can do without it, or to be more accurate, without cement clinker, which is the most important component of this construction material. More than 4.6 billion tons of cement are used around the world every year. Its production releases a high amount of CO<sub>2</sub> when fossil raw materials are heated in a rotary kiln. An even larger proportion of the emissions comes from the cement itself. The limestone in the cement releases approximately 600 kilograms of CO<sub>2</sub> per ton produced. In total, this amounts to 2.8 billion tons of CO<sub>2</sub> annually.

Conventional technology: blast furnace/converter process



Virtually greenhouse gas neutral technology: direct reduction with hydrogen



Percentage saving of greenhouse gas emissions: 97%

Source: Agora Energiewende and the Wuppertal Institute (2019)

Comparison of conventional steel production with H<sub>2</sub> direct reduction

The construction industry is currently aiming to use less cement, reduce the proportion of cement clinker and capture additional CO<sub>2</sub> in order to use or store it (CCUS – carbon capture usage and storage). However, underground storage is controversial.

#### Production of Petrochemicals

It is estimated that three quarters of the total mass of our solar system is hydrogen. The chemical and petrochemical sectors (or the upstream oil and gas industry) need large quantities of it. Refineries and fertilizer producers use more than three quarters of the total amount of hydrogen required by industry, above all for the production of basic chemicals such as ammonia (NH<sub>3</sub>) and methanol. Both of these are basic chemicals that are primarily used to manufacture other products. Ammonia is mainly used for the production of fertilizers and refrigerants. After being converted to formaldehyde, methanol is used to produce colorants and drugs; it also has the potential to be deployed as a fuel made from green hydrogen.

The petrochemical industry does not use the gas much as a raw material but to remove sulfur compounds from mineral oil, natural gas and the refinery products derived from them. During hydrocracking, hydrogen helps to convert heavy and viscous residues from the mineral oil refining process into lighter components and then to produce fuels such as kerosene and diesel from them.

The transition from conventional to green hydrogen would considerably improve this industry's climate impact, as would process optimizations and the increased use of electric power for the core processes. However, both would require significant investment in the production facilities.

#### Other Measures

In addition to adapting their processes, industrial companies should focus on fossil fuel free heat generation when reinvesting in their production sites. Just as the district heating networks in cities are often supplied by coal or natural gas-fired heating plants, the heat supply to industrial sites is still mainly based on conventional energy sources. This has to change if we are to reach our goals.



Industrial petrochemical plant

## The Transport Sector

Approximately 95 percent of the fuels used by the transport sector are still fossil fuels, mainly gasoline and diesel from mineral oil. This sector is currently responsible for 13 percent of the CO<sub>2</sub> emissions and 24.5 percent of the energy consumption in Germany. By 2030, the emissions are to sink by 42 percent in comparison with 2019 – with the help of better energy efficiency of all means of transport, a more pronounced transition to emission-free drives and fuels, more public or shared transport offerings, more journeys on foot and by bike and improved logistics that avoid unnecessary travel.

#### Technological Approaches

By 2030, Germany will need approximately 15 million cars and light commercial vehicles (LCVs) with electric drives if it is to achieve the EU fleet targets. Plug-in hybrids must have a minimum electric range of 50 to 60 kilometers. A ban on the production of combustion engines from 2032 or 2035 is under debate. It will be possible to ensure that most cars use e-fuels by 2030 with the help of imports. Heavy commercial vehicles (HCVs) are responsible for more than a quarter of the German transport-related greenhouse gas emissions. New trucks are to have an electric drive or fuel cells by 2030. Another option for long-distance travel is the hybrid trolleytruck. On freeways, it is supplied with electricity via an electrified wire; it is powered by its own electric drive on other roads. For new aircraft and heavy land-based vehicles as well, the aim is to transition to drives that use e-fuels or hydrogen.



Digital train control system

#### Infrastructure Measures

The core feature of a climate-neutral transport system is a well-functioning, sustainable infrastructure for ecomobility, i. e. for buses, streetcars and subways, as well as bikes and pedestrians. Local public transport systems must be attractive, low cost, fast, safe and comfortable. They need to expand their offerings and increase frequency and quality. Communication-based train control (CBTC) makes it possible to do without the usual signals, thus reducing maintenance costs. Moreover, the public transport company uses a digital train control system to increase the capacity of its routes, especially in the tunnels. This form of modernization is a trump card for the mobility transformation. This is because a CBTC system enables 'moving block' operation, whereby the trains move at braking distance instead of in fixed blocks, as is currently the case. Shorter train spacing is thus possible, allowing capacity to be increased by up to 25 percent – without expanding existing tracks and tunnels or building new ones.

The high-performance train control technology not only ensures more trains along the route but also improves interval accuracy and reliability. It facilitates better energy efficiency when travelling – savings of up to 15 percent are possible – and greater passenger comfort due to gentler acceleration and braking. This also reduces the wear on vehicles and tracks.

CBTC therefore has the potential to increase the share of rail-based local public transport in urban areas and thus to directly ensure more cleaner air in cities. Renewing outdated train control systems is not only a technical and operational necessity for transport companies, it is also indispensable in the light of future mobility requirements.

#### Speed Limits

General speed limits on German roads are viewed as rapidly achievable and as a low cost and effective means of helping to reduce greenhouse gas emissions, other pollutants and noise. However, it will be difficult to find a generally acceptable compromise. In principle, a digital solution that ensures a constant flow of traffic is needed in this case as well, alongside expedient upper limits.

## The Construction and Buildings Sector

According to a United Nations environment report, the construction and buildings sector has record levels of greenhouse gas emissions; it is lagging behind in terms of the goals of the Paris Agreement on Climate Change. The sector is actually moving farther away from the stipulations.

### Energy Consumption during Construction Phase – Gray Energy

New buildings in Germany have a very high energy standard that, in conjunction with modern heating systems, allows them to be run with either very little or even no CO<sub>2</sub>. However, the construction phase and not just the utilization phase is relevant. 'Gray energy' is involved in the construction of every new building; it is used when raw materials are produced, for the production of cement, steel and aluminum, for manufacturing construction elements and for the erection of the building.

A study of an apartment building revealed that its construction consumed almost 85 percent of the gray energy. Naturally, this proportion significantly changes with a technically equipped office building or an industrial site, where technology prevails.

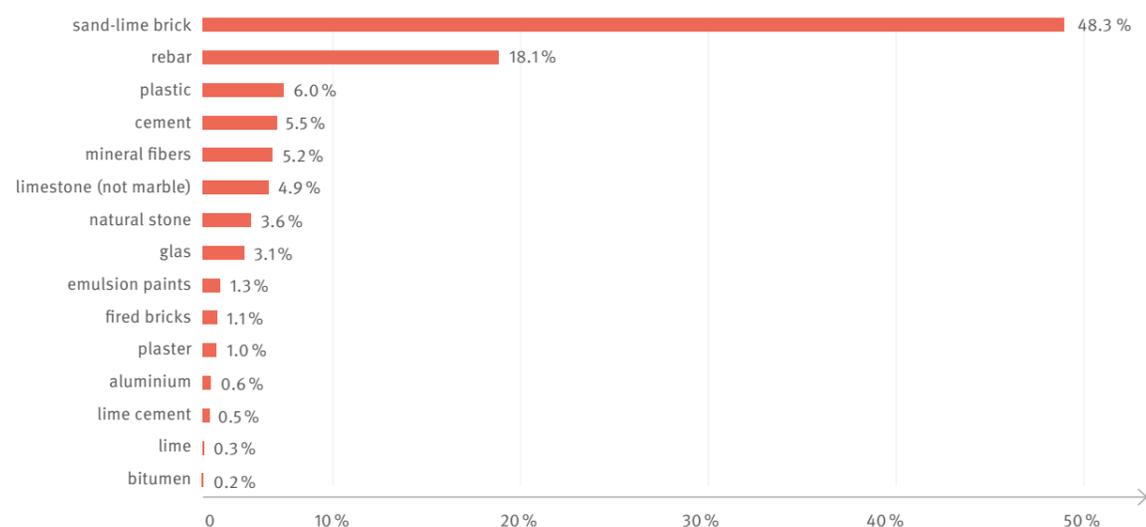
Recent studies assume that gray energy represents more than 50 percent of the primary energy consumption of the building's entire life cycle – long before the approximately 50 years of service life of the real estate. The only solution is a systematic expansion of the circular economy during construction.

Many stakeholders, such as suppliers of façade systems or windows or producers of recycled aggregate, are already making significant efforts in line with the Cradle to Cradle® (C2C) principle. However, many more parties must follow this example. However, the most efficient method to save CO<sub>2</sub> is building with wood. With CO<sub>2</sub>, water and the sun, wood is produced environmentally friendly by nature. Besides, oxygen is produced! In wood, a climatic-effective CO<sub>2</sub>-storage takes place over the whole lifecycle. With the use of wood with the building is also referred to as a carbon sink, since wood is the only building material can store carbon.

Drees & Sommer has been working intensively on building ecology since the 1990s. As a link between investors, clients, architects and product manufacturers, Drees & Sommer implements Cradle to Cradle innovations in planning, construction and operation. This results in buildings with outstanding interior quality, which at the same time ensure that the value of the properties will be maintained in the long term.

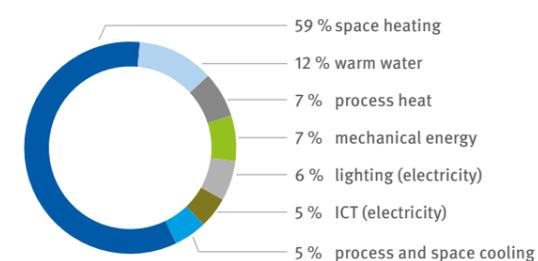
To expand these activities, Drees & Sommer acquired a majority stake in EPEA GmbH in 2019. Since its founded in 1987 by Prof. Dr. Michael Braungart, it has become an international innovation partner for environmentally products, processes, buildings, and urban districts.

### Energy consumption for the construction elements



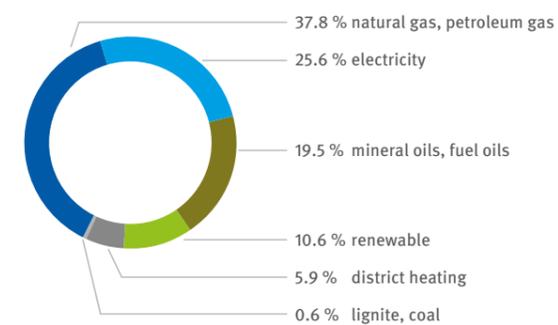
### Consumer Energy

There are more than 21.7 million buildings in Germany. Around 19 million of them house residential units, of which approximately 12.5 million were built before the first German Thermal Insulation Regulation (Wärmeschutzverordnung) in 1979. Heating accounts for approximately 60 percent of the energy consumption in the buildings sector. Another 24 percent is related to various types of heat and cooling systems. While households mainly need warm water and process heat (such as for washing machines and dish-washers), the commercial sector also requires process cooling.



Final energy consumption, building utilization  
(Source: BMWi – Federal Ministry for Economic Affairs and Energy, 2020)

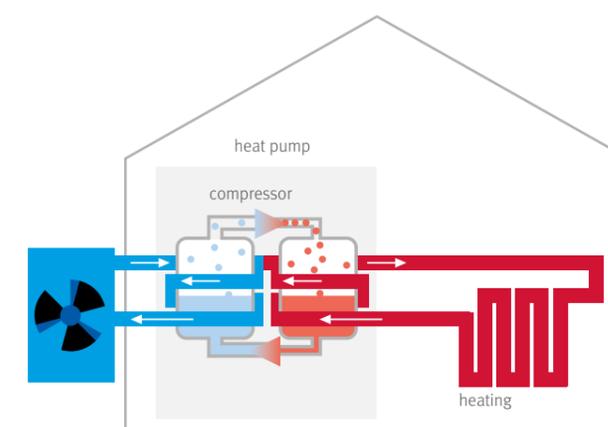
At more than 80 percent, most of the emissions in the buildings sector result from burning fossil fuels. This includes an increasing use of wood-fired heating systems. While wood is a renewable raw material, it should not be burned. When burned, wood not only releases the stored CO<sub>2</sub> but also a considerable amount of fine particulate matter. The impact on the air is much worse than with oil heating. And it takes 30 to 40 years before the amount of wood that has been burned grows back.



Energy sources, building utilization  
(Source: BMWi – Federal Ministry for Economic Affairs and Energy, 2020)

Wood has to be used for construction elements or as fertilizer – including in the form of chippings, sawdust and bark. For this reason, all wood-fired heating systems, including those that use pellets, should be banned as soon as possible. The only sensible way to shape the future of heating and cooling is to base it on electric heat pumps coupled with solar heating, geothermal energy and ambient air or waste air sources.

To reduce the energy requirement, it is imperative that substantial retrofitting of existing systems is prescribed and subsidized. First and foremost, this involves insulating roofs, walls and windows, together with intelligent ventilation without any loss of heat.



Mode of operation of a heat pump

## The Agriculture Sector

By 2030, the greenhouse gas emissions of the agriculture sector are to decrease by 15 percent in comparison with 2019. One measure is to reduce surplus nitrogen by using less nitrogenous fertilizer and thus to ensure a more sustainable and resource-efficient approach to foodstuffs. More stringent requirements for fertilizing are also important for water conservation. An expansion of the ecological farming segment is therefore to be aimed for; the German Federal Government spends € 36 million annually in subsidies for this purpose.

# The Need for Sector Coupling

The production of electricity from renewable energies fluctuates, as it depends on the strength of the wind and the hours of sunshine. Also, electricity cannot be stored in large quantities. In order that the future system can function despite this, 'sector coupling', which ensures that no energy is lost throughout the entire system, is needed. For this purpose lots of decentral energy consumption and generation units must be systematically linked together.

Here is an example to illustrate how it works. During a strong wind all the wind turbines are able to produce a large amount of electricity. But the grid cannot carry it because the consumption is low, and the pumped-storage plants are full. What happens without sector coupling? The operator must shut down some of its wind turbines, even though the harvesting conditions are ideal. Whereas with sector coupling mechanisms, such as power-to-gas, which convert the surplus electricity into the storable energy source hydrogen by means of electrolysis, come into play.

## The Coupling Sectors

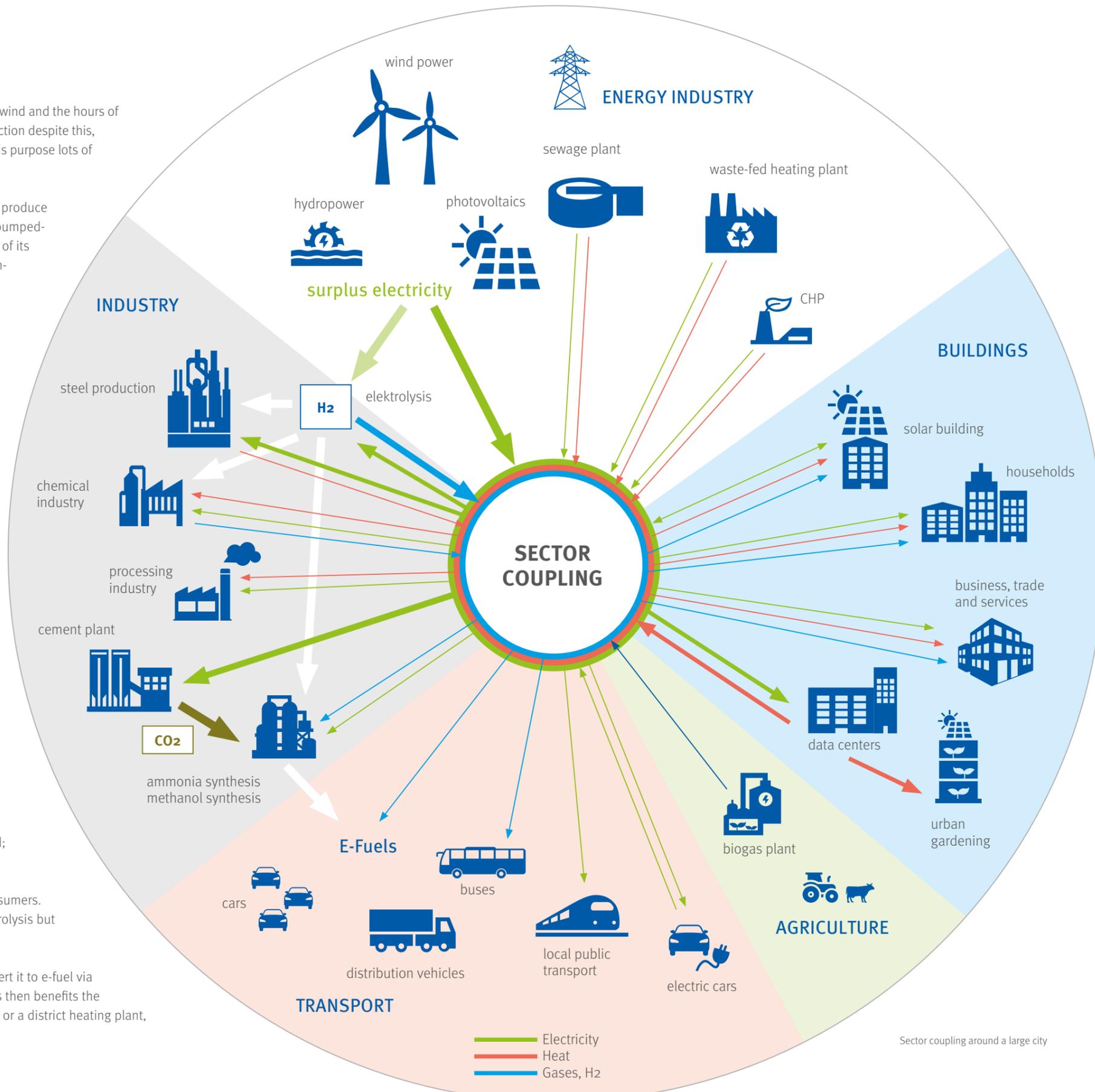
The coupled sectors are primarily electricity, heating and transport. Industry, commerce, trade and services as well as private households are integrated as consumer groups. Generating a large, fluctuating amount of electricity involves a comprehensive system change. The dependency on the weather means that much too much or much too little electricity is often available. This problem grows with the proportion of electricity produced from renewable energies, which is to amount to 40 to 45 percent by 2025 (2015: 30 percent). Today, billions of euros are already being spent each year on energy balancing or redispatch measures to ensure that the grid remains stable if too much electricity from renewable sources is produced. If we do nothing to counteract this, the trend will continue to grow.

Currently, conventional power plants still primarily control mechanisms that balance electricity generation from renewable energies with the electricity requirement. As this will no longer be possible within the framework of decarbonization, sector coupling must take over. It comes hand in hand with further efficiency and CO<sub>2</sub> reduction potential. Cell-like structures, such as urban districts, are suitable for this strategy, as it brings together various stakeholders and facilitates a wide variety of interactions. Existing infrastructures are not unnecessary, they are indispensable. We need to integrate them economically and intelligently. For example, the existing gas and heating network infrastructures can carry large amounts of energy and therefore make it available for efficient and climate-friendly use within the sectors. They can also provide temporary storage.

The illustration shows the wide variety of coupling options provided by the electricity, heat/cooling and gas/H<sub>2</sub> energy sources. A combined energy offering from these three energy sources is created; it can be supplied in different directions depending on availability and needs.

The renewable energies (except for geothermal heating) usually supply electricity to almost all consumers. If there is a surplus supply of electricity, it cannot only be converted to hydrogen by means of electrolysis but can also be used to charge electric cars or batteries in buildings via a digitalized system.

The virtually CO<sub>2</sub>-free production of steel is possible using the hydrogen. Another option is to convert it to e-fuel via a process involving ammonia or methanol synthesis using the CO<sub>2</sub> produced in cement plants. This then benefits the transport sector. The waste heat from a data center can be networked with an urban gardening site or a district heating plant, for example. All these are just a few of a wide range of options.

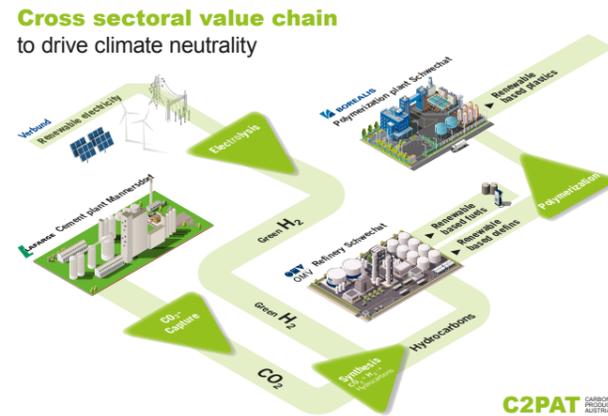


Sector coupling around a large city

## Examples of Sector Coupling

### Cement industry

The industrial companies Lafarge (cement), OMV (mineral oil and natural gas), Verbund (electricity) and Borealis (chemicals) are working on a partnership focusing on production with less impact on the environment. Together, they aim to have built a plant that will capture and use CO<sub>2</sub> on an industrial scale by 2030. The plant will be designed to capture CO<sub>2</sub> from the cement production process and enable the production of plastics, olefins and fuels on the basis of renewable raw materials. The partners are thus striving to create a cross-sector value chain in order to expedite climate neutrality, the circular economy and innovation. According to the industrial companies, the success of the joint project will greatly depend on whether politicians manage to set up the necessary financial and regulatory framework at both European and national level.



Source: C2PAT Decarbonization infographic

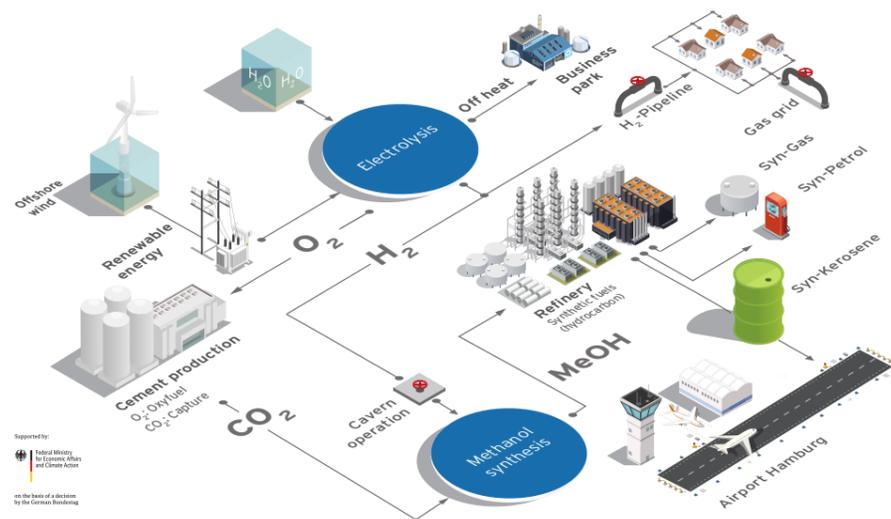
### Westküste100 Energy Transformation

This project focuses on the sustainable production of hydrogen and research into storage and transportation technologies for hydrogen, including trials on an industrial scale.

To achieve this, Westküste100 produces extremely climate-friendly green hydrogen by means of electrolysis using energy from offshore wind parks. At the Heide refinery, an integrated 30-megawatt electrolysis system is being set up that breaks the water down into its basic components: hydrogen and oxygen. The resulting waste heat (also known as process heat) is fed

into an existing and extended heating network and later, for example, is supplied to a business park. Westküste100 feeds the hydrogen into the gas network or makes it available for the production of methanol. A research team at the Lägerdorf cement plant benefits from the oxygen.

They are studying how emissions can be reduced by the production of clinker. Even the small amount of remaining CO<sub>2</sub> that is inevitably produced by all burning processes is to be utilized as a raw material. The idea is to use the carbon dioxide from local cement production to produce synthetic hydrocarbons.



Industrial scale green hydrogen and decarbonization

Source: westkueste100.de



Source: Deutsche Aircraft

### Climate-friendly regional air transport begins with sustainable production processes

As a new German aircraft manufacturer, Deutsche Aircraft is pursuing a strategy of enabling climate-neutral flight operations in the short term rather than waiting to implement climate-friendly technologies.

Deutsche Aircraft also attaches great importance to sustainable energy supply and environmental compatibility in the production of the D328eco™. Among other things, Drees & Sommer is supporting Deutsche Aircraft with project management and planning services for the design of the state-of-the-art final assembly line at Leipzig/Halle Airport.

In addition to the pre-development of future aircraft concepts based on a hydrogen fuel cell system, the company is currently focusing on making the next aircraft – the D328eco™ – suitable for so-called PtL (Power to Liquid) fuel. PtL is also based on hydrogen as the basic energy source, but is chemically very similar to fossil kerosene and can therefore be used operationally more quickly. To optimize the carbon footprint, Deutsche Aircraft is working closely with energy suppliers and fuel manufacturers to ensure the scalability of PtL technology and to help driving its expansion. At the same time, work continues to minimize energy and thus fuel consumption by implementing the latest aircraft and engine technologies.

## What will the Obstacles be?

We will only manage to achieve the transformation that is required across all sectors if business, politicians and society as a whole work hard together. Above all, we must speed up the pace of the transformation significantly. The many challenges associated with this require well-coordinated packages of measures and higher-level political supervision that creates incentives and a clear general framework – by means of subsidies and suitable regulations.

However, speeding up the journey to climate neutrality also means that we have to scale better than we have previously done, for example in production processes. In the field of hydrogen production, the task will be to create more standardized electrolysis capacities in shorter spaces of time. Otherwise, our goals will remain unattainable.

As the capacities of drilling companies are scarce, we need geothermal plants for climate neutral heat supply. Tapping into underground heat sources more intensively than we have previously done is only possible if new companies with experience of industrial production and standardized processes join this market segment.

Another major obstacle which is also linked to uncertainty is the state of the solar industry in Germany. The German solar industry was once a leading light. But this was ten years ago. Between 2012 and 2015, the solar industry in Germany was phased out due to the reduction or discontinuation of the subsidies; most of it relocated to China. Only a few small companies were able to maintain a basic level of production.



There is now a new company in Bitterfeld. One company in the face of the numerous established competitors in China – this is not enough. However, the solar industry as a whole is a major segment in Germany: mounting frames, solar cells, solar modules, inverters and storage batteries. More is happening in this context. As far as skilled staff is concerned, the situation looks very bleak. There is a dramatic shortage of skilled staff. If you order a solar system today, it will take weeks or even months before someone arrives to attach it to your roof.

The picture is the same in the plant construction field. There are supply shortages for materials and a lack of skilled staff. Whether it be planning and approval processes or implementing projects – everything is delayed when there are not enough qualified workers. The difficulties can only be remedied by means of structural changes.

Approval processes for new electricity lines or onshore wind parks must proceed much more quickly; this will only be achieved by significant intervention into current legislation. Change demands a highly increased awareness of energy consumption and the use of resources. This awareness has long been developing – ‘thanks’ to increasing costs for CO<sub>2</sub> emissions resulting from conventional energy generation. Their rising prices create opportunities for more climate-friendly technologies, which in turn become less expensive due to the wider demand and the resultant improved scaling. The laws of the marketplace take effect quickly and encourage the fast spread of more climate-friendly applications.



Almost every location for wind turbines or the route of power lines is disputed due to different interests. There is (still) no overriding interest for an energy supply from renewable energies.

## Summary

And one thing is clear. We will only achieve the energy transformation and thus the CO<sub>2</sub> reduction if we exploit all the options related to the networking of a CO<sub>2</sub>-free energy industry without any technological limitations. At Drees & Sommer, we propose a three-stage strategy.



To enable us to achieve these goals, we need to discuss and communicate in an open, targeted way and without being slowed up by special interest groups. Considerable investment and subsidies will be needed to adapt the energy industry to renewable energies and to promote CO<sub>2</sub>-free processes in all sectors.

Enormous changes are ahead of us, in the fields of plant and building construction and operation in particular. Without the systematic introduction of the circular economy (C2C), all the efforts on the part of the construction industry will come to nothing. Successful decarbonization in the transport sector is first and foremost based on the expansion of the electricity infrastructure. If those in power accept the import of synthetic fuels in the initial stages, this will have a great impact in terms of the vehicle fleet.

However, the essential factor is the digital networking of energy production and distribution all the way to private homes and electric cars in the interests of successful sector coupling.

## DREES & SOMMER SERVICES FOR SECTOR OPTIMIZATION AND SECTOR COUPLING

### Cross-sector services

- › Factory planning for the production of stacks, electrolyzers and fuel cells
- › Drawing up innovative concepts for a sustainable heat supply
- › Design, planning and project management for the use of fuel cells and electrolyzers
- › EPCM/GCM for production plants for battery and cell production

### Services in the transport sector

- › System planning and energy design for mobility hubs
- › Planning and project management for charging infrastructure

### Services in the energy sector

- › Project management and process consultation services for electricity, gas and H<sub>2</sub> line projects
- › Project management for geothermal power plants
- › Contract management and general support for power plant conversions (fuel switching)
- › Consultancy services in connection with organization, processes and BIM for network expansion projects

### Services in the real estate sector

- › Planning and project management for decentral heat networks in districts
- › Project management and general planning for buildings and urban districts

Drees & Sommer's current projects are not only related to German locations but also to the sites in Europe. Projects for the large-scale production of renewable energies and in connection with the production of hydrogen and synthetic fuels are also planned outside of Europe.



# TEAM SPIRIT AND EXPERTISE FOR NEW EUROPEAN HEADQUARTERS

Called Level 4, the encounter area promotes cooperation and blends fun and work.

The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 3 and 13. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>



Drees & Sommer started supporting global medical technology company Olympus with the redevelopment of its European headquarters in Hamburg in 2014. The global player is building the Olympus Campus in response to the trends and challenges of future work environments and the Drees & Sommer team supported the company by delivering with a solid team performance.



With a range of different seating, the company restaurant offers a high level of user amenity.

"Wanderlust" is the theme of the lounge area designed by a team of Olympus creative employees.



Client: Olympus SE, Hamburg | Project duration: July 2014 – July 2021 | Architecture: GMP Architekten, Hamburg | Drees & Sommer services: Requirements planning, management of architectural competition, system planning, investor selection procedure, project management, user project management | Key project data: GFA: 55,000 m<sup>2</sup> (above ground)



The modern laboratories meet both stringent technical requirements and highest design standards.

The new building represents a clear commitment on the part of Olympus to Hamburg as an attractive location for business and is a clear signal of the company's sustainable growth in Europe, the Middle East and Africa. Drees & Sommer's main task was highlighting design options and future-proofing the newly emerging work environment with regard to integrating hybrid and activity-based working.



**"A solid project team and an excellent, trusting relationship with the customer were key to the success of the project."**

Dirk Burmeister,  
Team Leader at Drees & Sommer

The challenge for the Drees & Sommer experts – in the face of a mandate that continued to expand in scope – was that the planned building featured numerous different functional and usage areas: Alongside modern office work-places and creative lounge areas, the plans included laboratories, a showroom, a company restaurant, as well as conference and training rooms, and a fitness studio. This resulted in complex interfaces between tenant fitout with high-quality furnishings and fixtures, laboratory equipment, media technology and owner fitout.

The foundation stone for the construction project was laid in summer 2018. A modern office complex with building element of up to eleven floors was built on an 8,700 square meter site. It has a three-level underground car park and offers almost 48,000 square meters of leasable office space. The majority of the space will be leased by the Olympus technology group, renowned for its medical technology and optical instruments.

Drees & Sommer impressed Olympus with the great team spirit they showed in the joint project team. Short paths of communication and the flexible handling of customer wishes did the rest. The company also impressed with its wide range of services – and the team's in-depth expertise in areas as diverse as the identifying a suitable execution model and integrating BIM. The experts were able to reduce the customer's workload in particular by acting as a central point of contact and interface coordinator for the general contractor and tenant fitout contractors.

The 'Nature' themed meeting place inspires users with lush greenery and natural materials.



# PROFESSIONAL SUPPORT FOR THE ENERGY SECTOR



Pipe installation in the new energy center – hot water instead of steam in the „Weißenburger Straße“.

Client: Dortmunder Energie- und Wasserversorgung GmbH (DEW21), Dortmund |  
Project duration: 2017 – 2023 | Drees & Sommer services: Schedule control, reporting,  
consulting services | Key project data: Project costs: Over €100m.

The global challenges of the recent past have brought the issue of sustainable and secure energy supply to the attention of many people. Drees & Sommer is demonstrating what sustainable solutions look like – with various projects in the energy sector.

In the Ruhr metropolis, Drees & Sommer is supporting **Dortmunder Energie- und Wasserversorgung GmbH (DEW21)** with the conversion of the entire Dortmund heating infrastructure. This involves converting and expanding the old 25-kilometer steam network to a hot water network. In the course of this, waste heat from industrial plants is also being used. All in all, the measures will reduce CO<sub>2</sub> emissions by over 45,000 tons per year. Once the network has been converted, the new energy centers have been built and all customer stations have been converted, the Dortmund power plant can be shut down.

The team initially drew up the overall schedule for the project and has since ensured reporting for management bodies and documentation. Drees & Sommer is also supporting cost control and is responsible for the central organization manual. The experts are also supporting tendering and award processes, advising the client on contract negotiations, supporting certification, and supervising the planning and realization of one of the three new energy centers.



The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 7 and 9. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>



The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 9 and 11. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

Drees & Sommer is currently supporting sustainable quarter development with an energy component in Trier. Directly on Ostallee, the Stadtwerke's business and administration premises are being gradually transformed into a sustainable quarter. The core element is the new joint administrative headquarters of Stadtwerke Trier and Volksbank Trier, which is being integrated into a densified inner city quarter. The players here are acting with Quartier Ostallee GmbH & Co. KG as developer and property owner for the entire quarter and want to make an active contribution to climate and environmental protection with the project. The supply of energy in the new quarter is planned to be CO<sub>2</sub>-neutral and based on renewable and regionally generated energy.

This ambitious project development was prepared by Drees & Sommer through a feasibility study with profitability analysis, definition of user requirements and a pre-check for DGNB certification. The advantage for the client was that all know-how came from Drees & Sommer experts. The best design with a sustainability concept will now be selected via an RPW process (guidelines for planning competitions) – and implementation will then start on this basis.

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Client: Quartier Ostallee GmbH & Co. KG, Trier | Project duration: November 2020 – May 2022 | Drees & Sommer services: Feasibility study and development concept, Blue Sprint, demand planning, competition management | Key project data: GFA: Approx. 40,000 m<sup>2</sup> in two construction phases, construction costs: Approx. €120m.

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On Ostallee in Trier, the Stadtwerke's business and administration premises are being transformed into a sustainable quarter.



The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 7 and 13. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>



The residue processing center in Philippsburg has already been in operation since December 2020.

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Client: EnBW Kernkraft GmbH (EnKK), Neckarwestheim nuclear power plant | Project duration: Total duration: December 2014 – December 2020 | Drees & Sommer services: Project management and project coordination, project management office (PMO), coordination of commissioning management, construction management for subsections, LSM, cold commissioning coordination | Key project data: GFA: 33,000 m<sup>2</sup>

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With the official approval at the beginning of 2021 for the commissioning of the newly constructed **residual materials processing center** (RBZ) on the Neckarwestheim power plant site, **EnBW** was able to start processing materials from the dismantling of unit Neckarwestheim I. The RBZ is currently being expanded to include materials from Unit II. Later, this can also be extended to material from Unit II, once this is also being dismantled. EnBW had already received approval for the commissioning of the almost identical RBZ in Philippsburg in December 2020. Residual material processing is an important step in the entire process chain of efficient and resource-saving dismantling.

The complex planning, construction, approval and commissioning process lasted a total of around six years and was accompanied and monitored very closely by independent experts and the Baden Württemberg Ministry of Environment. The Stuttgart-based planners and consultants from Drees & Sommer provided comprehensive advice to the client, EnBW Kernkraft GmbH (EnKK). The energy specialists supported EnKK project lead, for example, with project management tasks, schedule control, purchasing processes, warranty management, and training.

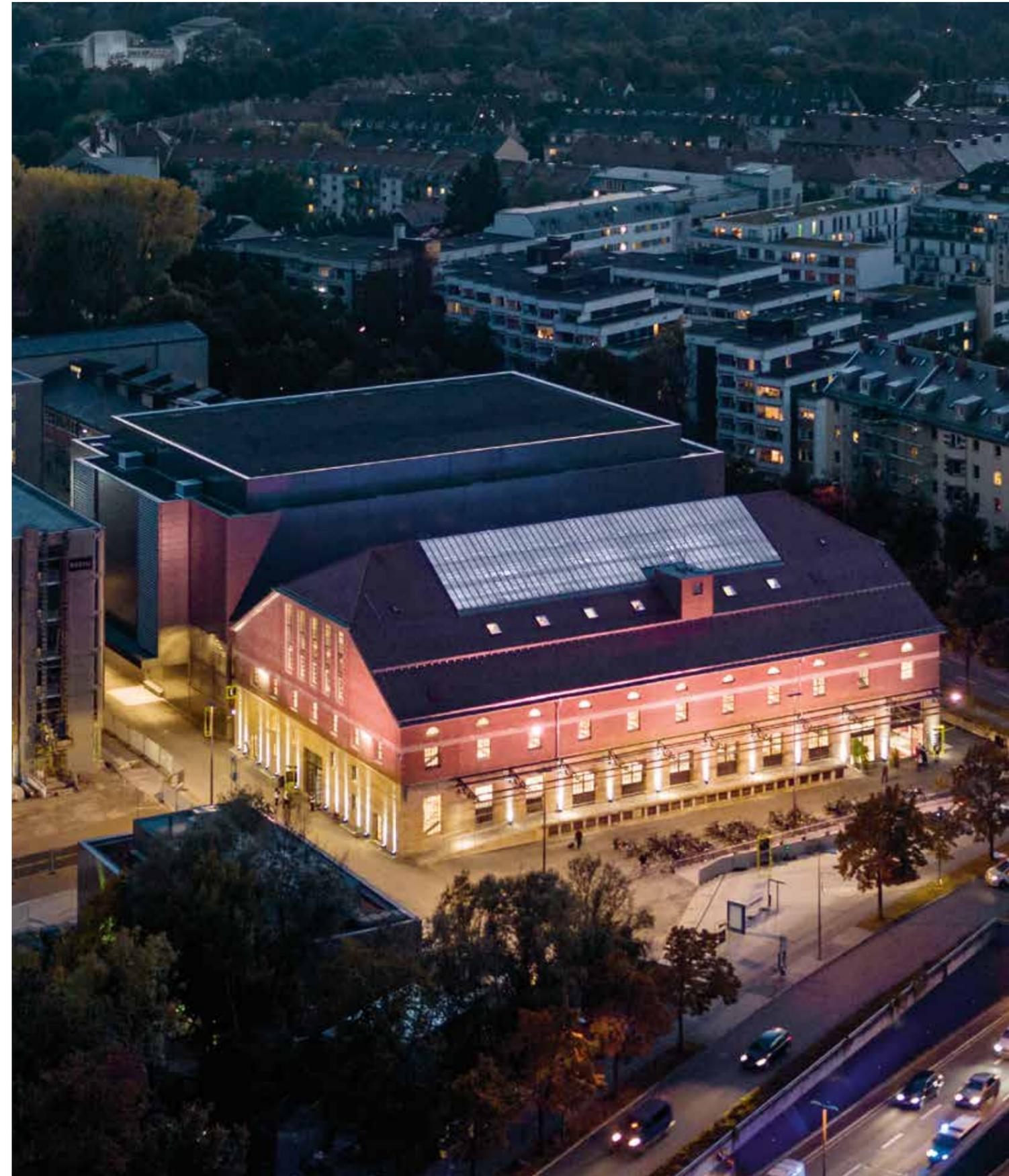
These solutions show the wide-ranging expertise with which Drees & Sommer is supporting the important energy sector on its way into the future.

# GASTEIG HP8 OPENS ON SCHEDULE AND WITHIN BUDGET

With some 1,800 events and 1.8 million visitors per year, Gasteig is Europe's largest cultural center. The building, which first opened in 1984, is currently being stripped back to the shell and completely renovated. Gasteig München GmbH has built a temporary venue to bridge the gap until the renovation is completed.

The new home comprises a heritage-protected brick building dating back to the 1920s and four new modular structures grouped around it. The legacy transformer building is being renovated as part of the project and now functions as a central foyer and houses the Munich City Library and the Volkshochschule (Adult Education Center). Directly adjacent to the existing building is the Isarphilharmonie concert hall, the interior of which is lined with timber modules.

Friday October 8, 2021: From the very beginning, everyone – the musicians as well as all those involved in the construction project – were bursting with excitement and working towards this day. Because the temporary venue Gasteig HP8 at 8 Hans-Preissinger-Strasse in Munich's Sendling district had to be ready in time for the Isarphilharmonie's opening concert. A Drees & Sommer team helped the client, Gasteig München GmbH, to achieve this important milestone. The experts joined the project after the draft planning had been completed. The principal was already familiar with Drees & Sommer from its involvement in the Gasteig general refurbishment project.





Flooded with natural light, Hall E extends over several floors.



Modular shelving in the City Library offers great flexibility.

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Client: Gasteig München GmbH, Munich | Project duration: May 2019 – July 2022 | Architecture: gmp Architekten von Gerkan, Marg und Partner, Berlin | Drees & Sommer services: Project control, LCM, ACM | Key project data: GFA: 26,500 m<sup>2</sup>, Construction cost: approx. €70m (net)

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The so-called Stairway to Heaven in the 'gap' between Hall E and the Isarphilharmonie concert hall.



“The pressure to succeed was palpable. The project was in the limelight from the very beginning. Steering such a project across the finish line on time and within budget during such a challenging time was very satisfying for the entire team – and for me personally!”

André Schlesiger,  
Senior Team Leader at Drees & Sommer

First, the project management professionals analyzed the ongoing construction project and undertook overall process analysis. They then realigned the project according to Lean and Agile Construction Management principles. The web-based collaborative solution LCM Digital helped to identify progress at a glance and enabled coordinated management.

The team frequently faced fresh challenges as a result of the pandemic, supply bottlenecks and contractor capacity problems. Added to which they had to cope with the cost and schedule pressure without compromising the high quality requirements, as evidenced by the client hiring a renowned Japanese acoustic designer to ensure excellent concert hall acoustics.

The project team managed changes and special requests from the various users and integrated them into the process and the budget. The final phase was taken up with numerous coordination sessions with authorities and permit applications. The experts represented the interests of Gasteig München GmbH throughout the project and eased the client's workload by providing expert advice and showing personal commitment that went beyond the contractually agreed services.

The result impressed not only the client, but also the users, the press, visitors and the general public in Munich, because Gasteig HP8 was opened on schedule and within budget, providing a worthy temporary venue for the popular cultural center.

The audience enjoys a concert in the Isarphilharmonie.



# ALLIANZ ACQUIRES 421 RENTAL RESIDENTIAL UNITS IN SPAIN

In June 2021, Allianz Real Estate acquired its first Private Rented Sector (PRS) portfolio in Spain. The transaction was preceded by Technical, Environmental and Smart Assessment Due Diligence undertaken by a team from Drees & Sommer.



Client: Allianz Real Estate GmbH, Paris | Project duration: April 2021 – June 2021 |  
Drees & Sommer services: Technical, Environmental and Smart Assessment Due Diligence |  
Key project data: Residential units: 421, Living space: Approx. 41,000 m<sup>2</sup>

The transaction comprises 421 upscale residential units spread across 21 properties in central locations in Madrid and Barcelona, as Allianz Real Estate continues to expand its global commitment to the private rented sector (PRS). This is in keeping with the insurer's strategy of investing in new or recently renovated premium properties. Located in prime urban locations and meeting strict sustainability criteria, the properties target the mid-market segment.



“Supporting a global player with its commitment to a sustainable property portfolio in Spain was a great experience for the entire team from Stuttgart, Madrid and Barcelona!”

Mario Núñez Garcia, Senior Consultant,  
Christian Knapp, Consultant  
and Francisco Martin, Consultant,  
all from Drees & Sommer in Spain

Allianz Real Estate announced its ESG program in early 2021, which aims to reduce the firm's carbon footprint by 25 % by 2025 and decarbonize the firm's global portfolio by 2050. The framework covers three areas of focus: Assess, Improve/Engage and Own Operations and will exclude any form of offsetting:

- Assess: evaluating our global portfolio to provide a basis to manage progress
- Improve/Engage: redevelopments and working with stakeholders to improve sustainability. Stakeholders will include investment partner, suppliers, tenants and borrowers and activity will be measured using science-based targets such as the Carbon Risk Real Estate Monitor (CRREM), GRESB data and benchmarking tools, it will be compliant with EU Taxonomy requirements and cover both areas under the direct control of Allianz Real Estate and those of the tenants
- Own operations: considers our business activities

In the lead-up to the client's acquisition decision, a Drees & Sommer team examined technical, environmental and digital aspects of the properties. The experts from Madrid, Barcelona and Stuttgart succeeded in undertaking a detailed analysis of the portfolio in the agreed timeframe.

The consultants also identified innovative refurbishment solutions that can be implemented sustainably. For example, a program for future renovations, such as façades, technical installations, etc. The close and trusting cooperation between the client and the Drees & Sommer team contributed to the success of the project.



The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 7, 11 and 13. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>



# MEGASUCCESS! DISTRICT DEVELOPMENT IN FRANKFURT

Bonifatiuspark with the adjoining districts 'Schöne Aussicht' and 'Bonifatiusbrunnen'.



The project makes a substantial contribution to UN Sustainable Development Goal (SDG) 11. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

A completely new district has been developed in Frankfurt over the last 20 years. Drees & Sommer undertook controlling from start to finish of the 'Am Riedberg' project, one of the largest urban developments in Germany.



Completed in 2013, Gymnasium Riedberg grammar school's passive-house buildings offer 1,500 students a modern learning environment.



View across the Riedberg-Mitte and Ginsterhöhe districts with the Frankfurt skyline in the distance.

Client: City of Frankfurt am Main | Project duration: April 1999 – January 2022 | Development agency: HA Hessenagentur GmbH (Development agency and trustee of the city of Frankfurt am Main) | Drees & Sommer services: Controlling, strategic controlling, Project Communication System (PCS) | Key project data: Gross building land: 893,576 m<sup>2</sup>, Parkland: 763,087 m<sup>2</sup>, Development: 419,510 m<sup>2</sup>, 6,400 residential units, 13 kindergartens, 2 primary schools, 2 secondary schools | Cost of building land development: Total expenditure including financing costs: €602.3 million



The 'RiedbergZentrum' shopping center in the central district meets residents' day-to-day needs and serves as a social hub.

The lack of urban housing is not just a recent problem. The Frankfurt housing market was already tight back in the early 1990s. In order to satisfy the enormous demand, in 1996 the city of Frankfurt earmarked 'Am Riedberg' on the outskirts of the city for urban development. The planning area is located to the northwest of the city and covers a gross construction area of 266 hectares, which made it one of the Germany's largest urban development projects at the end of the 1990s.



“The ingredients for success as a long-standing consultant are professional expertise, perseverance, constructive collaboration, and a trusting relationship with the client.”

Petra Gruber,  
Leading Consultant at Drees & Sommer

The aim was to create a completely new urban district. The city of Frankfurt saw the rapid implementation of measures as a prerequisite for cost efficiency and the success of the project. This made it essential to outsource controlling tasks extending beyond the contract with the development agency to an external third party. Even 20 years ago, Drees & Sommer had already accumulated extensive expertise with regard to costs, schedules, quality levels and experience in urban development projects, making it well-qualified as a controller for this mega-project. After the contract between the city and the project developer was signed in December 1998, the team joined the project at a very early stage, setting up controlling structures and establishing comprehensive project controlling. The project managers checked the cost and finance overviews as well as the project timeline and proposals to ensure achievement of the project goal. While the focus of activity during the initial phase of the project was on reviewing the schedule and quality goals, this shifted over the course of the project to strategic and analytical consulting on marketing and then to in-depth and extensive controlling of the trust assets. The experts displayed perseverance and patience in meeting the changing challenges over the years, and also helped the client reach strategic decisions.

Following the start of the central site development, six development plans were adopted. Construction started in 2001. Riedberg with its seven suburbs (Bonifatiusbrunnen, Schöne Aussicht, Universität, Mitte ('central'), Ginsterhöhe, Altkönigblick and Westflügel) developed into a district offering everything needed to enjoy a high quality of life on the urban fringe. Today, 'Am Riedberg' has a population of about 15,000 in 6,400 residential units. The district has 13 kindergartens, two primary schools, two secondary schools, sites for the University of Frankfurt, parks and sports fields. There are also shops and facilities meeting everyday needs. Tailor-made solutions delivered by Drees & Sommer made a significant contribution to the successful completion of this challenging urban development project.

# MICRO-APARTMENTS MAXIMIZE USE OF SPACE



Affordable housing is scarce in cities. Nevertheless, young professionals and students are increasingly drawn to metropolitan areas. They want to live in a place that's practical, but also attractive and central. The future trend of microliving meets these demands: Drees & Sommer has supported many projects that have created new living space in the form of microapartments.

How much living space do you actually need? Very little, if it is optimally designed and all functional areas – such as the bathroom, kitchen, sleeping and living area – only take up a few square meters. The **Flair Schwabing** microapartments in Munich are a perfect example: Five different types of apartments on seven floors offer a range of options for young professionals, businesses and students. Thanks to the design work by the Drees & Sommer's User Experience (UX) team the units lack for nothing, from a large bed and a high-quality bathroom to a workspace and a fully equipped kitchenette. So residents can enjoy every comfort and convenience without feeling cramped. The design developed by the UX experts was awarded the German Design Award in the category 'Excellent Architecture – Interior Architecture'. The architectural concept of the Munich residential complex impressed the jury with its timeless design language and ingenious layout. The team supported the Investa Real Estate project from 2015 until its completion in 2020/2021, and also developed the brand architecture and interior design of the 84 microapartments including the entrance and access areas.

Client: Investa Projektentwicklungs- und  
Verwaltungsgesellschaft mbH, München |  
Project duration: 2015 – 2021 |  
Drees & Sommer services: User centric Conception  
and Design | Key project data: Seven floors,  
84 micro apartments, apartments from 26 to 54 m<sup>2</sup>



The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 3, 8 and 11. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>



“The key task was optimizing the floor plan to make the layout smarter and integrating it into the overall complex.”

Ton Heijmans,  
Associate Partner at Drees & Sommer  
in the Netherlands

Client: Stebru Vastgoed, Rotterdam /  
Investor/Operator: Greystar |  
Project duration: February 2016 – January 2022 |  
Architecture: Tangram Architecten, Amsterdam |  
Drees & Sommer services: Development management, project management, construction management | Key project data: Height of residential building: 70 meters, Floors: 24, Rental apartments: 612, Area of apartments: 18,5 – 53 m<sup>2</sup>

A 70-meter residential tower that offers a new home to young city dwellers is located in Rotterdam. The development, called **OurDomain Rotterdam Blaak**, features 612 unique apartments. More than 400 of the apartments are available at basic rents below the liberalization threshold. OurDomain is located in Rotterdam city center, just a few minutes' walk from the Rotterdam-Blaak transport hub. The complex offers an comprehensive residential concept tailored to students and young professionals. The studio and two-room apartments have floor areas ranging between 18.5 and 53 m<sup>2</sup>, and are partially furnished and some of them are furnished. There are also communal work, learning and service areas. OurDomain Rotterdam Blaak is an investment by the international developer Greystar and was designed by Stebru and BOAG – the latter is now Drees & Sommer Netherlands. Stebru was responsible for construction and Drees & Sommer was commissioned by Stebru to undertake project management and quality assurance during design and realization. Greystar is responsible for the operation and administration of the properties.



One of the three imposing towers of the high-rise ensemble Trillple.



Functional, practical and open to everybody are the common rooms.



Commonly used rooms invite to exchange.



“The high-quality furnished apartments are optimally tailored to the needs of the residents: In addition to a cozy atmosphere, the impressive residential ensemble creates space for a healthy life-work balance.”

Armen Hanusic,  
Project Leader at Drees & Sommer in Austria

Client: CORESTATE Capital Holding S.A., Luxembourg |  
Project duration: November 2017 – June 2021 |  
Architecture: Henke Schreieck Architekten ZT GmbH |  
Drees & Sommer services: Technical Due Diligence (TDD), technical monitoring, DGNB Quick Check, cost tracking, change management, FF&E quality controlling, FM tendering, extended support in the acceptance phase | Key project data: Total living space 17,000 m<sup>2</sup>

The three imposing towers of the **Trillple** high-rise complex thrust skyward above Vienna's rooftops. Drees & Sommer supported the construction project by providing real estate consulting and other consulting services. CORESTATE Capital Holding S.A. is opening this second development with 671 high-quality microapartments for students and young professionals in a prime location between the city center and the green Prater. The furnished apartments range in size from 21 to 57 square meters and have top-quality bathrooms and fully equipped kitchenettes – and some also feature balconies with breathtaking views of Vienna. A range of facilities, including learning, gaming, creative, cinema and chillout lounges, is available to all residents. The Drees & Sommer team in Austria took over consulting in the Technical Due Diligence phase, drew up the purchase contract, and also advised on the building and fitout specification. The experts also represented the client on site and coordinated communication between the trades. The Drees & Sommer team was additionally responsible for quality assurance, cost tracking and schedule controlling. Sustainability and environmental awareness became important aspects of the new building. In recognition of the innovative energy technology – heating and cooling use river water drawn from the neighboring Danube Canal – the project received the 'Major Residential Project Of 2020' award.

The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 9, 11 and 13. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>





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# LIVING — INDIVIDUAL AND URBAN

Even in the case of large-scale rental apartments, including more than one room, the market is changing. Who wants to live in gray, uniform apartment blocks? Two Dutch projects show how individual housing of the future can be: Nature in spite of city and community instead of anonymity: The **Valley** project in Amsterdam features three striking landscaped residential towers. The development takes its name from the publicly accessible lush green valley that lies like a gorge between the towers. Of the 75,000 square meters of floor space, the majority is taken up by some 200 apartments and office space spread across seven floors. EDGE, the project developer, attached great importance to the design combining stylish urban living and healthy, natural materials. Large terraces, water features and the attractive landscaping invite residents and visitors to linger. Drees & Sommer undertook project management to include change orders of investor RJB in the building process for this unique project in Zuidas, an Amsterdam suburb and business district. The building, which combines the latest trends in sustainability, technology and health, was awarded the 'Excellent' sustainability certificate by BREEAM-NL. Construction work was completed in 2021, and the last tenants will move in over the course of 2022.

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Client: EDGE / Investor: RJB Group of Companies, Amsterdam | Project duration: 2015 – 2021 | Architecture: MVRDV, Rotterdam | Drees & Sommer services: Project management | Key project data: GFA: 75,000 m<sup>2</sup>

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Client: Bouwinvest Real Estate Investors, Amsterdam | Project duration: 2019-2021 | Architecture: CULD/Inbo, Rotterdam | Drees & Sommer services: Construction management | Key project data: Total area of towers: 62,400 m<sup>2</sup> (8,481 m<sup>2</sup>, 6,148 m<sup>2</sup> and 6,781 m<sup>2</sup>)

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With their black steel railings and red brick, the bridges connecting the residential towers remind of the New York architectural style.

Contrary to what the name suggests, **Little C** is not a small building, but a large residential and office complex in Rotterdam with fifteen buildings featuring lofts, apartments, studios, meeting places, offices, and food and beverage outlets. The Dutch real estate investor Bouwinvest acquired 209 rental apartments in this development project. Drees & Sommer represented Bouwinvest during construction to check on progress and quality of these apartments. In addition to the complexity of the project itself, the fact that the construction was being carried out in a highly frequented environment posed a particular challenge for the project managers. With its red brick facades, large windows and steel fences, the project designed by Inbo and CULD is reminiscent of typical New York City streets and courtyards.

Whether microapartments or urban multi-room apartments – Drees & Sommer supports project developers and clients when a lot of space for well-being is created on a limited area.



# ELEGANCE, WANDERLUST AND A NATURAL VIBE – ALL UNDER ONE ROOF

6 floors, 414 rooms, 144 parking spaces – and 3.5 years in the making: The Motel One Group has built a new hotel on the site of the former EnBW headquarters near Stuttgart Central Station. Drees & Sommer supported the project throughout all phases of construction.

Drees & Sommer has a long connection with the site: The company was involved in the renovation of the adjacent award-winning Lederer building. More recently, they provided full on-site construction management and project control services for the new Motel One building.

The result impresses guests with a mix of modern elegance, wanderlust and a natural vibe, and blends perfectly into its surroundings. Highlights of the city hotel include a planted U-shaped courtyard with a breakfast terrace, over 144 underground parking spaces, a lounge with workbenches, a meeting room accommodating up to 15 people, and an indoor terrace.

The open bar area features warm colors and the elegant ambience of a modern budget designer hotel.





Conference space: Integrated into the hotel lounge, the meeting room offers a quiet yet inspiring environment.



The hotel lounge is the perfect place for guests to unwind.



Reminiscent of grapes:  
The colorful lights add to  
the natural vibe.



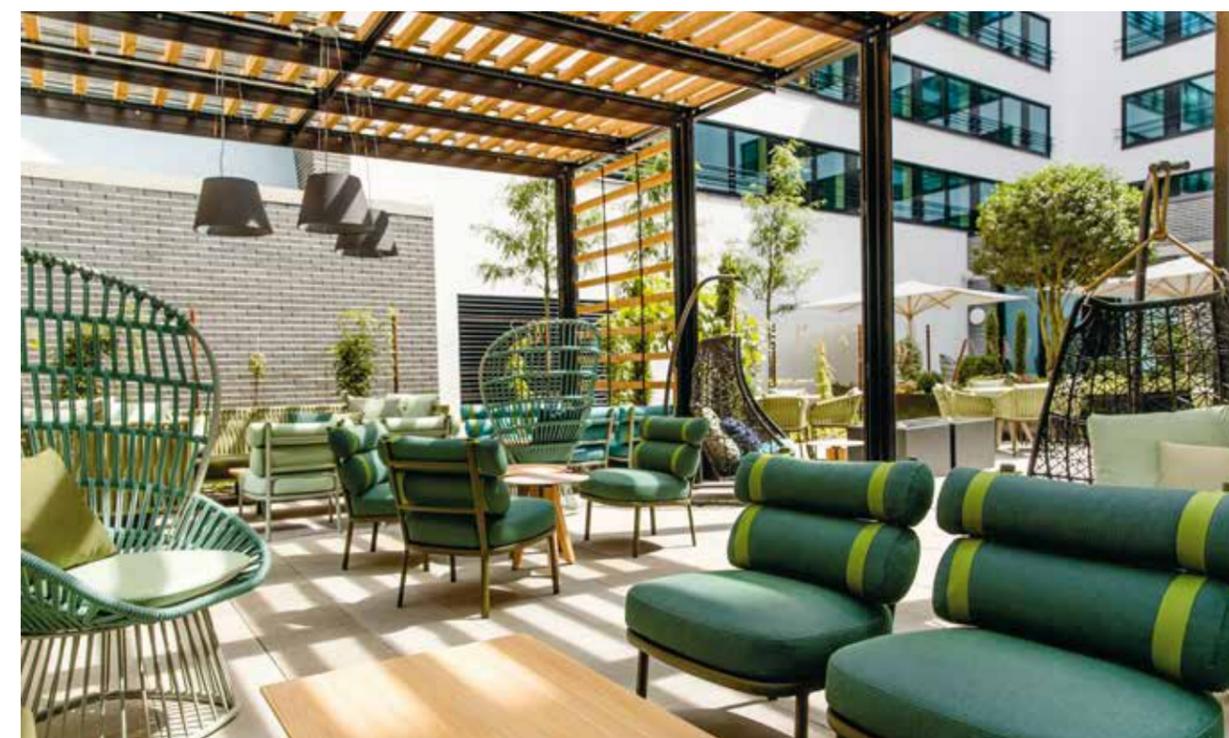
“We acted as a kind of temporary construction department, dealing intensively with the wishes and ideas of both Motel One and the underground car park leaseholder, the Parkgesellschaft Baden-Württemberg.”

Nicole Stillig,  
Senior Project Manager at Drees & Sommer

The project presented a range of challenges. During the construction phase, the main task was to ensure smooth construction site logistics in Stuttgart's city centre without impacting city traffic. This was critical, because the Kriegsbergstrasse, a key traffic artery, runs along the side of the new building. There is also a hospital in the immediate vicinity. The structural integration of the legacy building built in 1996 also had to be taken into account. The construction management experts relied on Lean Site Management to ensure the rapid progress of construction work. The key element of this approach is a detailed project execution plan that is timed down to the day. This helped to avoid costly and time-consuming rework, idle time and waste of manpower and materials. The opening took place on schedule in August 2021 and the guests were delighted.

Client: Reiss & Co. Real Estate München GmbH | Project duration: January 2018 – July 2021 |  
Architecture: LRO Lederer Ragnarsdóttir Oei, Stuttgart | Drees & Sommer services: Invitation to tender and contract award (cost group 300), site supervision (cost group 300+400), construction site logistics, OH&S, building physics, facade engineering, project management | Key project data:  
Area of site: Approx. 2,500 m<sup>2</sup>, GFA: Approx. 11,500 m<sup>2</sup>

The courtyard terrace is an ideal place for guests  
to soak up the sun, sip a coffee, and enjoy breakfast.





The project makes a substantial contribution to UN Sustainable Development Goal (SDG) 9. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

Client: City of Cologne, Office for Bridges, Tunnels and Light Rail Construction | Project duration: January 2014 – June 2022 (Vingst station) | Architecture: Architektenbüro Frings, Kretzhaus and Schüssler-Plan Ingenieurgesellschaft mbH, Cologne | Drees & Sommer services: Project management | Key project data: Construction costs: Approx. €8m (gross)



The transparent architecture of the new Vingst station is an effective crime prevention feature.



Amenity and good lighting were important requirements for the entrances during the remodeling of Vingst light rail station.

# BIM KEEPS COLOGNE RAIL ON TRACK

The role of local public transport in the mobility transition is difficult to overestimate. Ensuring the safety and user-friendliness of light rail stations is a particularly important task, and one that the City of Cologne has entrusted to Drees & Sommer.



The Friesenplatz station upgrade will include a longer platform and enhanced fire protection.



“The early and ongoing involvement of all stakeholders in processes and decision-making contributed significantly to the success of the complex project control.”

Jochen Kurrle,  
Senior Team Leader at Drees & Sommer  
Sina Willmer,  
Senior Project Leader at Drees & Sommer

Over the last eight years, Drees & Sommer has managed the upgrade of the Vingst light rail station in Cologne. The project goals included enhancing fire protection and making the underground station safer and more attractive. Accessibility and crime prevention measures include high visibility areas and openings to allow in natural light.

Following successful completion of the upgrade, in 2021 the infrastructure experts were awarded two follow-up local public transport contracts in the cathedral city: The first contract, awarded in accordance with Europe-wide tender procedures, will see Drees & Sommer manage the remodeling of the Friesenplatz light rail station over the coming years. Located in the center of Cologne and featuring two track levels and a distribution level, it is one of the largest underground stations in the city.

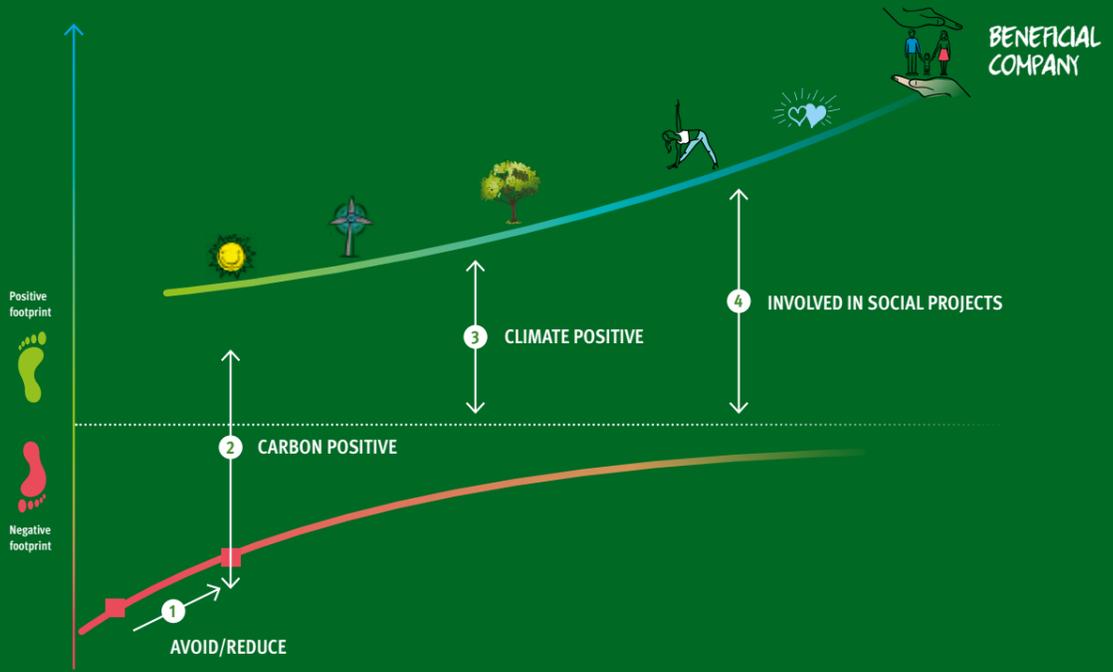
The City of Cologne's specifications call for the existing escalators to be upgraded by retrofitting five elevators. Other measures include adapting the height and length of the platforms to suit the new generation of trains, and upgrading the fire protection technology. Building Information Modeling (BIM) will be used for the planning of the light rail station, marking the first time this technology has been used for one of the city's projects. Due to the complexity and importance of the project, Drees & Sommer will also undertake extensive commissioning management.

Drees & Sommer has also been awarded the contract for the remodeling of the Barbarossaplatz light rail station, again after a Europe-wide tender process. The focus of this central redundant above-ground light rail hub in the center of Cologne is on preparing the station for the new generation of light rail vehicles, which require longer and higher platforms.

As was the case for past projects, all work has to be carried out with transport system in full operation. In addition, the project must meet very stringent fire protection requirements, and project managers have the role of coordinating the many project participants. Drees & Sommer has already substantially reduced the workload for the City of Cologne: Reliable process management allowed harmonization of the schedule with financing and subsidy requirements and the successful conclusion of the project.

# BECOMING A BENEFICIAL COMPANY

Drees & Sommer follows international sustainability standards



- 1 AVOID/REDUCE**
  - > Business travel (flights)
  - > Single-use products
- 2 TECHNOLOGY AND COMPENSATE**
  - > Buying green electricity
  - > Electromobility
  - > Own power generation
  - > Offsetting of CO2 emissions by carbon credits
- 3 CLIMATE POSITIVE**
  - > Using Cradle to Cradle® products
  - > Encouraging biodiversity
  - > Planting trees
- 4 SOCIAL ENGAGEMENT**
  - > Fitness and health facilities for staff
  - > Supporting aid organizations and social institutions

The way to become a beneficial company is not only to compensate for negative impacts, but to go beyond this to leave a positive footprint.

Drees & Sommer is committed to sustainable corporate development that reconciles long-term business success with ecological and social objectives. Our goal as a Beneficial Company is to give back to the environment and society more than we consume through our business activities.

Drees & Sommer's commitment draws on the Sustainable Development Goals (SDGs) of the United Nations' 2030 Agenda for Sustainable Development. To underline that Drees & Sommer is serious about its own sustainability goals, the company joined the United Nations Global Compact Initiative in 2021. The initiative supports companies worldwide in promoting responsible corporate governance. Participating organizations commit to aligning their activities and strategies with ten principles relating to human rights, labor standards, the environment and preventing corruption. In an annual Communication of Progress, companies report on implementation status and their activities to promote sustainable development.



**SUSTAINABLE DEVELOPMENT GOALS**  
The 17 Global Goals agreed by the United Nations came into force on January 1, 2016. They serve as a blueprint for economic, social and environmentally-sustainable transformation toward a sustainable global community.



Building on our extensive efforts to reduce greenhouse gas emissions in recent years, we also joined the Science Based Target Initiative (SBTi) in 2021. This ensures that Drees & Sommer's corporate climate strategy is aligned with the requirements of the 2015 Paris Climate Agreement.

The **SCIENCE BASED TARGET INITIATIVE (SBTi)** is an alliance of the UN Global Compact, Carbon Disclosure Project, World Resources Institute and the World Wide Fund for Nature. Under the initiative, companies commit to setting and implementing their own greenhouse gas emissions reduction targets. The target setting is based on science to ensure that the goals of the Paris Climate Agreement are achieved. To this end, SBTi has developed its own standard based on the GHG Protocol.

## Selection of key sustainability issues

Drees & Sommer stays in constant contact with clients, employees, associations, the media and the general public. Through a number of communication formats, the company focuses on transparent dialog and constructive cooperation with all stakeholder groups. In the context of sustainability reporting, a materiality assessment is used to identify ‘material’ fields of action within which sustainability is to be promoted.

To do so, the issues were assessed in an online survey based on the parameters ‘added value’ and ‘impact’. Key sustainability issues are those that have received the highest assessments, both from the perspective of stakeholder groups and in terms of their impact on the environment, society and the economy. An issue has a ‘high impact’ (horizontal axis) if it has a major effect on the environmental or social area and, on the other hand, if many areas of Drees & Sommer have an influence on this issue. The vertical axis shows which issues are particularly relevant to sustainable corporate success from the viewpoint of the stakeholder groups. It thus reveals the area in which the greatest expectations are placed on Drees & Sommer.

The fields of action identified as material are relevant for the entire Drees & Sommer Group. They are given full reporting in accordance with the international sustainability reporting standard of the Global Reporting Initiative (GRI option ‘core’). Other relevant sustainability issues (e.g. sustainable procurement, biodiversity, water consumption) are also included in the report. They are addressed through measures as part of the beneficial company strategy. However, there is no comprehensive reporting as defined by the Global Reporting Initiative.



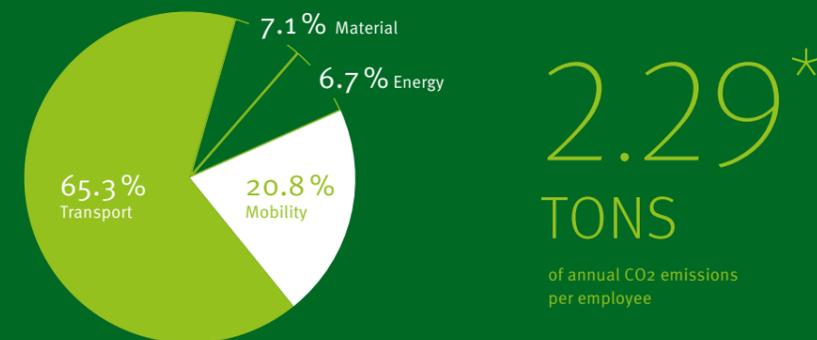
The materiality matrix gives an overview of the impact and the added value of the key sustainability issues, thus enabling relevant measures to be prioritized.

## The company’s carbon footprint

As part of its sustainability strategy, Drees & Sommer reports on the carbon emissions arising from supplying energy to its locations, and on business travel volumes. The non-profit organization myclimate provided support with this.

In 2021, Drees & Sommer reduced and offset its carbon emissions to such an extent that we are now climate-positive. While climate protection certificates are a significant part of this, the carbon offsets are gradually being reduced. We are currently offsetting greenhouse gases equivalent to 15,000 tonnes of carbon dioxide. For a positive climate footprint and to stabilize global biodiversity, we also fund the planting of 75,000 trees every year.

### GREENHOUSE GAS EMISSIONS BY CATEGORY



2.29\*  
TONS  
of annual CO<sub>2</sub> emissions per employee

**myclimate**  
shape our future

‘The international initiative with Swiss roots is a global quality leader in voluntary carbon offsetting measures. Through projects of the highest quality, myclimate promotes quantifiable climate protection and sustainable development worldwide. Emissions are reduced by replacing fossil fuel sources with renewable energy, implementing local reforestation together with smallholders and by applying energy-efficient technologies.’

At 86 percent, the biggest share of emissions is attributable to business travel and the company’s own vehicle fleet. The remaining emissions are due to energy requirements for operating the office buildings and the purchase of consumables. Company-wide, our greenhouse gas inventory is 9,772.2 metric tons.

Calculated by myclimate

The greenhouse gas inventory is based on the internationally recognized standard ‘The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard’. It includes the climate-related greenhouse gases that fall under the ‘operational control’ of the company. The data basis for the calculations is obtained from ecoinvent 2.2 and the IPCC 2007 assessment method (GWP 100A).

Greenhouse gas emissions are divided into three ‘scopes’ according to the Greenhouse Gas Protocol. This categorization makes it possible to distinguish where the emissions originate: at the company itself, or in upstream or downstream processes for manufacturing and transporting goods.

The framework for preparing our global corporate inventory was defined together with myclimate for 2021 as follows:

- Scope 1:** heating buildings, own vehicle fleet
- Scope 2:** electricity for buildings, district heating/cooling
- Scope 3:** business travel (train, air, rental car), paper, water, purchased IT equipment, use of data centers

### GREENHOUSE GAS EMISSIONS OF THE DREES & SOMMER GROUP, BY SCOPE

Scope 1	4,551.6	47%
Scope 2	209.0	2%
Scope 3	5,011.6	51%
<b>Total</b>	<b>9,772.2</b>	<b>(in metric tons of CO<sub>2</sub>*)</b>

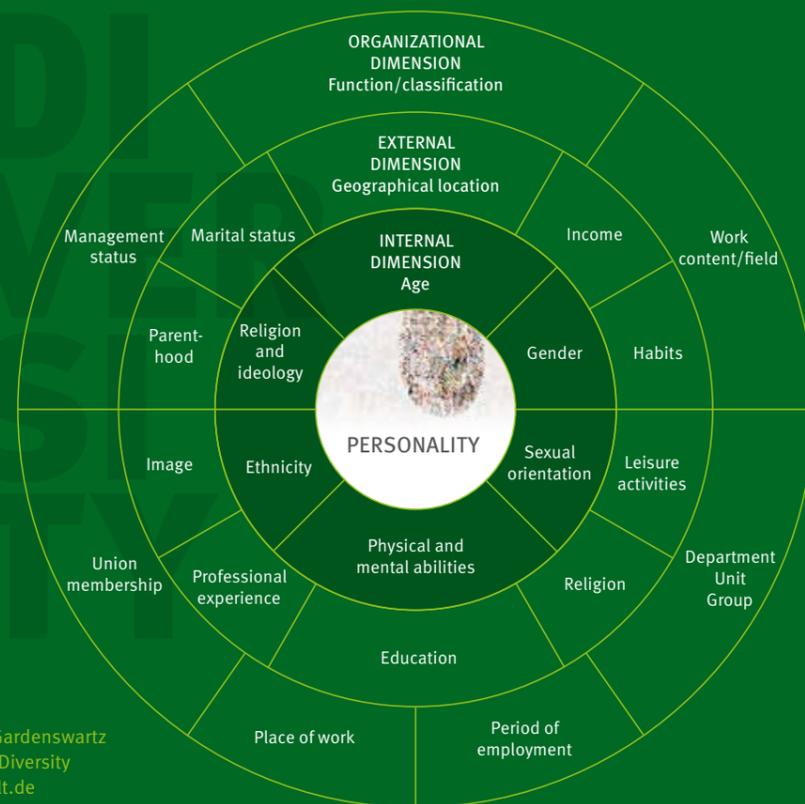
\* Figures based on metric tons of CO<sub>2</sub> equivalents. The calculation takes into account all relevant greenhouse gases as defined in IPCC 2007.

## Social sustainability

A key success factor of our company lies in forming diverse teams, valuing differences and deploying them effectively. Because BLUE IS COLORFUL. A package of measures to promote a diverse and inclusive culture within the company was developed in internal meetings and workshops and is currently being implemented. Measures already introduced include forming a diversity and women's network, incorporating gender-appropriate (visual) language in internal and external communications, unconscious bias training, and the implementation of a diversity statement:



Illustration based on Gardenswartz and Rowe: 4 Layers of Diversity [www.charta-der-vielfalt.de](http://www.charta-der-vielfalt.de)



But sustainable also means social. As a company on the way to becoming a beneficial company, we also involve socially. Together with all Drees & Sommer staff members, we continued the 'donation instead of gifts' campaign, in which our employees forgo their birthday presents from Drees & Sommer. As a result, we were able to donate the savings to SOS Children's Villages International and to the 'Die HoffnungsBAUer' initiative run by the aid organization 'Habitat for Humanity Germany'.

In the summer of 2021, heavy rain, storms and floods caused severe damage in parts of Germany. Our employees launched an appeal to collect urgently needed resources and everyday items. In addition, Drees & Sommer donated to the victims of the flood disaster. Our experts in the German federal state of North Rhine-Westphalia are also providing advice on developing and implementing an urban future-oriented reconstruction plan. Through innovative concepts, ideas and network contacts, Drees & Sommer is supporting the municipality of Eschweiler in developing flood-resilient buildings and infrastructure that are sustainable over the long term.

## Our Beneficial Company approach

## More than just climate protection

We promote climate action and social commitment. In 2020, we carried out fifty social and environmental projects to mark our 50th anniversary. This commitment has provided the impetus to continue sponsoring projects on a regular basis in the future. To fulfill our social responsibility, we introduced a structure in 2021 for the long-term support of social and ecological projects, enabling our sustainability projects to be handled centrally.

In the spring of last year, for example, our employees joined forces with ForstBW, the State forest administration of the German federal state of Baden-Wuerttemberg, to support a tree-planting campaign in Schönbuch Nature Park. Woodland areas in the Swabian and Franconian Forest have been dying at an unprecedented rate since 2017. Some stands do manage to rejuvenate naturally. Yet a lot of trees do not succeed. The Drees & Sommer team helped plant forest trees in areas that had to be cleared due to bark beetle infestation and drought.

**OUR TARGET: BENEFICIAL COMPANY**  
As a **Beneficial Company**, we give more back to the environment than we consume from it through our business activities. In this regard, we make long-lasting positive contributions to the environment and society while bringing about maximum benefit in these areas. Examples of this include:

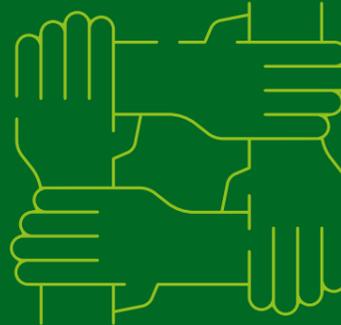
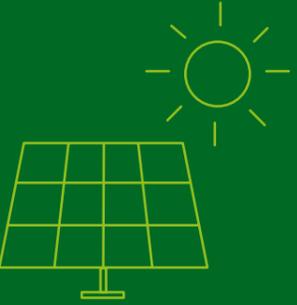
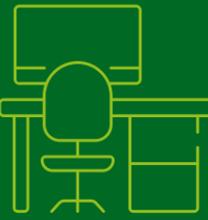
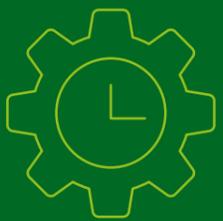
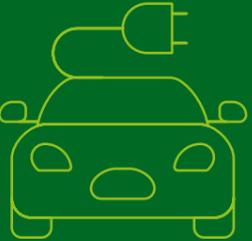
- > Fulfillment of social role model function
- > Reducing CO<sub>2</sub> emissions
- > Following the Sustainable Development Goals (SDGs)
- > Planting trees
- > Future-oriented approaches such as Cradle to Cradle® or Blue City.

ESG	BENEFICIAL COMPANY TARGET 2030	SPHERES OF ACTIVITY	IMPLEMENTATION STRATEGY
ENVIRONMENT	Climate positive	1. MATERIAL RESSOURCES	<ul style="list-style-type: none"> <li>- Reduce quantity of waste and close nutrient cycles</li> <li>- Sustainable purchasing</li> </ul>
		2. ENERGY AND CLIMATE	<ul style="list-style-type: none"> <li>- Compensation over and above offsetting unavoidable emissions</li> <li>- Science-based and comprehensible strategy development</li> <li>- Reduce energy consumption</li> <li>- Increase share of renewable energy</li> <li>- Active use of CO<sub>2</sub> from the atmosphere</li> </ul>
		3. TRANSPORT	<ul style="list-style-type: none"> <li>- Low-carbon commuting</li> <li>- Low-carbon business travel</li> </ul>
		4. WATER	<ul style="list-style-type: none"> <li>- Reduce water consumption</li> <li>- Reduce volume of sewage into public network</li> </ul>
		5. BIODIVERSITY	<ul style="list-style-type: none"> <li>- Increase biodiversity at Drees &amp; Sommer locations</li> </ul>
SOCIAL	Model-employer	6. EMPLOYEES	<ul style="list-style-type: none"> <li>- Diversity</li> <li>- Flexibility</li> <li>- Preventive healthcare</li> <li>- Further training and education</li> </ul>
	Social role model function	7. SOCIETY	<ul style="list-style-type: none"> <li>- Social sustainability in the value chain</li> <li>- Implementation of social projects for community and environment</li> <li>- Engagement in social projects and strategically focused continuation</li> <li>- External service providers' compliance with collectively agreed and minimum wage laws</li> </ul>
GOVERNANCE	Responsible and transparent corporate governance as part of the way we see ourselves	8. LEADERSHIP	<ul style="list-style-type: none"> <li>- Responsible corporate governance</li> <li>- Honest and transparent communication</li> <li>- Increase visibility in the market</li> </ul>
	Sustainable, leading and innovative business	9. PROFITABILITY	<ul style="list-style-type: none"> <li>- 100 percent of projects start with a digital strategy</li> <li>- 100 percent of projects start with a sustainability strategy</li> <li>- Sustainable innovations</li> <li>- Sustainable finance</li> </ul>

Targets, spheres of activity and strategic foundations of Drees & Sommer (clustered according to ESG criteria)

## Lots of different measures make a whole

The road to becoming a climate-positive company consists of several small steps – but, as it turns out, these steps are also positive in economic terms. The following overview covers only a selection of the internal measures we have taken.

 <p>Voluntary and financial support for sustainability organizations</p>	 <p>Since 2019, we have been working with Afb (Arbeit für Menschen mit Behinderung), a non-profit organization supporting people with disabilities, which recycles and resells IT equipment.</p>	 <p>Joining global sustainability initiatives (UN Global Compact and Science Based Target Initiative)</p>	 <p>Implementation of sustainable standards and Cradle to Cradle® principles in construction projects for company's own use</p>	 <p>Green electricity at all German locations and company-owned charging stations</p>
 <p>Diversity and inclusion (networks, trainings, corporate language, external employee consulting service)</p>	 <p>Installation of tap systems for drinking water instead of using reusable bottles</p>	 <p><b>SUSTAINABLE MOBILITY CONCEPT</b></p> <p>The mobility of our employees, both commuting and business travel, has the greatest impact on our CO2 inventory. 65 percent of our total consumption is caused by our vehicle fleet and 21 percent by other business travel. As a result, an internal team of experts developed a comprehensive mobility concept in the course of 2021. To promote sustainable mobility, Drees &amp; Sommer offers its employees appropriate incentives and a high degree of flexibility in their choice of transport. This lets every employee actively contribute to the mobility turnaround at Drees &amp; Sommer.</p>		 <p>Expansion of photovoltaic systems at various locations</p>
 <p>Recyclable building materials, furniture and interior fittings</p>	 <p>Flexible working time models</p>	 <p>Environmentally-friendly products for events, catering, cleaning, print media, advertising materials</p>	 <p>Gradual conversion of vehicle fleet to alternative fuels</p>	

## Our ESG solutions for the market

Profitability through beneficial business is not just something we have set out to do internally. Through our comprehensive sustainability consulting services, we support our clients on the way towards a climate-positive and livable future. Our advisory assignments already include more than:

640 ENERGY AUDITS  
20 ESG ROADMAPS / ESG STRATEGIES  
2,700 GREEN DUE DILIGENCES / EU TAXONOMY CHECKS  
475 GREEN BUILDING CERTIFICATIONS  
10 GREEN BONDS ASSIGNMENTS  
590 CRADLE TO CRADLE® ASSIGNMENTS (EPEA GMBH – PART OF DREES & SOMMER)

### INDUSTRIAL PRODUCTS

- › Circular Economy, EPEA  
C2C, product passports, etc.
- › Integral factory planning

### INFRASTRUCTURE AND MOBILITY

- › Mobility concepts  
Mobility certificates, e-charging infrastructure, etc.

### COMPANY

- › New Work  
Health and wellbeing, etc.
- › ESG Corporate  
Advice on sustainability strategy, reporting, etc.

### URBAN DISTRICTS AND INDUSTRIAL SITES

- › Blue City  
Technical master plan, Climate action concepts, German Sustainable Building Council (DGNB) certification, connected districts, etc.
- › Zero Carbon  
Decarbonization of energy and heating infrastructure, hydrogen, LNG terminals

### REAL ESTATE PORTFOLIOS

- › Circular Economy, EPEA  
C2C, urban mining, Building Circularity Passport, etc.
- › Green building and energy design  
Consulting and certification for zero and plus energy buildings, German Sustainable Building Council (DGNB), LEED, etc.
- › Green tech  
Madaster, Building Material Scout, ESG Toolbox, Aedifion, etc.
- › Real Blue investment management company
- › Energy efficiency in existing buildings  
Energy audits, energy optimization, energy monitoring, CO2 strategies, etc.
- › ESG consulting  
EU taxonomy, green bonds, etc.

### ESG TOOLBOX

Drees & Sommer has developed the Sustainability Performance Toolbox, a digital platform that helps companies manage their ESG activities. The toolbox includes all relevant sustainability systems. It thus provides guidance on existing ESG regulations and disclosure requirements: for new build and renovation projects, purchases and sales, as well as portfolios and financial products.

**ESG**  
TOOLBOX  
powered by Drees & Sommer



### EPEA GMBH – PART OF DREES & SOMMER

Drees & Sommer and the former EPEA Internationale Umweltforschung GmbH share a long history. After years working in close partnership to provide advice to building contractors and investors, in 2019, Drees & Sommer and Professor Michael Braungart and his team merged to form a new company, EPEA GmbH – Part of Drees & Sommer. The aim is to establish Cradle to Cradle® design principles for the circular economy in all sectors of industry.

**EPEA**  
PART OF DREES & SOMMER

### COLLABORATION WITH MADASTER

Madaster provides a global online materials directory which not only contains information about the origins and quality of building products, it also offers a basis for calculating the key value data for specific buildings and materials. This makes the value of the raw materials transparent so that buildings become veritable storehouses of raw materials. The partnership with Madaster and the support of the platform as a 'Kennedy' is an important step which will help to promote the circular economy in the real estate sector.

**M**  
MADASTER

### PROJECT EXAMPLE:

#### Developing assessment indicators for sustainable buildings

The market for green bonds is growing rapidly. However, as far as real estate projects are concerned, there is a lack of binding standards for assessing their sustainability. On behalf of the Association of German Pfandbrief Banks (vdp), Drees & Sommer experts have developed a benchmarking tool that assists credit institutions engaged in real estate financing to provide evidence of compliance with the EU taxonomy.

According to the EU's Taxonomy Regulation, the acquisition or ownership of a building constructed up to December 31, 2020, makes a significant contribution to achieving the environmental goal of climate protection if one of the following two conditions is met: either an energy certificate with energy efficiency class A is available, or it can be demonstrated that a building belongs to the top 15 percent within the local market in terms of primary energy requirement.

Drees & Sommer has worked out which criteria must be met for properties to be included in the top 15 percent, thus demonstrating that the buildings make a significant contribution to achieving the environmental goal of 'climate protection'.

### GLOBAL REPORTING INITIATIVE

Our sustainability reporting is based on the guidelines of the Global Reporting Initiative (GRI). They have become established as an international standard and are constantly being developed. The Annual Report 2021 was prepared in accordance with the requirements of the Global Reporting Initiative (GRI Standards 2016 in line with 'Core'). You can access the detailed version of our GRI 2021 report using the QR code shown:



**GRI**

# CUSTOMIZED, FLEXIBLE AND SUSTAINABLE

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Client: Baytree Deutschland, Frankfurt | Project duration: September 2020 – October 2021 |  
Architecture: IB Klussmann, Gütersloh | Drees & Sommer services: Project management, engineering  
consulting | Key project data: Area of halls, offices, staff amenities and outbuildings: 58,000 m<sup>2</sup>  
(This figure relates to the Magdeburg project.)

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The logistics sector continues to undergo profound change. While more and more microhubs are being created in inner cities, the demands on modern logistics centers at major hubs that serve as transshipment points are increasing. Automated digital processes are to be used to make these centers more efficient and help them meet their sustainability goals.

One such state-of-the-art logistics center is located in Magdeburg, where project developer Baytree has built a distribution center for Samsung SDS. The company uses the center to handle the nationwide distribution of Hankook car tires. Fully operational since October 2021, the logistics park represents the first project completed by Drees & Sommer for Baytree Properties. Drees & Sommer is currently undertaking other projects for the customer in Leipzig and Barleben.





Fly over and fly through: This video gives an impression of the Baytree logistics center in Magdeburg, the 2021 LOGIX Award Finalist.

During development phase for the Magdeburg project, Drees & Sommer supported Baytree Logistics Properties with the functional invitation to tender and contract award to a general contractor. The experts then managed the project and successfully provided support services during commissioning, acceptance and handover – and right through to the sales process. The team was able to complete the project within the budget and ambitious schedule specified by the user, Samsung SDS.

The facility is tailored to the user's requirements for the automotive tire business – but designed so flexibly that it is also suitable for other logistics services. Baytree placed special emphasis on social, ecological and economic sustainability. For example, the distribution center has a solar air system to heat the 26,000 square meter hall area in winter and cool it at night in summer. The park is also equipped with charging facilities for EVs and e-bikes. The grounds include a pond-like rainwater retention basin with outdoor seating and a barbecue area. And with the user's agreement, unneeded parking space was converted into a multipurpose sports field. The Baytree Magdeburg logistics park is certified DGNB Gold and was a finalist in the 2021 LOGIX Award for the best logistics properties.

Customized but also suitable for other uses: The logistics park is geared to the special requirements of the tenant, Samsung SDS, but can be flexibly repurposed, if necessary.



“A sustainable, flexible logistics facility tailored to the user's needs: The Drees & Sommer team understood immediately what was important to us – and showed great commitment and efficiency as they managed the project to a successful conclusion!”

Sascha Petersmann,  
Baytree Logistics Properties, Head of Germany

A trusting relationship was ensured as Baytree and Drees & Sommer have been collaborating successfully since August 2019 on the construction of a new logistics center in Leipzig. The distribution center, consisting of two halls plus an office building and outbuildings, is scheduled to go into operation in August 2022. Here, too, Baytree is relying on a sustainable concept that meets the future tenants' requirements while also being suitable for other uses. Initially, the experts supported the client with approval management. Impressed by their performance, Baytree also commissioned the team to undertake coordination of an urban development contract, manage and control the general contractor tender process, and provide engineering consulting services.

The team of experts joined the new construction project in Barleben, Saxony-Anhalt in February 2021. The facility is a deep-freeze warehouse for the anchor tenant Hellofresh. In addition to project management know-how, the Drees & Sommer team's expertise in refrigeration technology worked in its favor. The logistics center, which consists of two buildings, is scheduled to go into operation by the end of 2022.

The multipurpose sports field next to the logistics hall is perfect for active work breaks.





The Levi Strauss & Co. logistics center makes a substantial contribution to UN Sustainable Development Goals (SDGs) 3, 7, 9, 13 and 15. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

And this is what it will look like: Project developer DELTA is currently realizing a logistics center for Levi Strauss & Co in Münsterland.

Client: DNG Dorsten S.à.r.l., Luxembourg through DELTA Projektentwicklung & Management GmbH, Düsseldorf | Project duration: February 2020 – December 2023 | Architecture: Quadrant 4, Oisterwijk (Netherlands) with Phase 5 Architekten, Düsseldorf | Drees & Sommer services: General Construction Management, General Technical Planning, Project Management, Building Services Engineering, STE, FCE, EDS, WELL and LEED certification, Cradle to Cradle® | Key project data: GFA: 75,000 m²

Following the completion of a modern, future-proof logistics facility for Baytree in Magdeburg, the same is now being done in the Münsterland region. The Levi Strauss & Co. logistics center is scheduled to go into operation there in 2023. Thanks to the support of the Drees & Sommer logistics experts, project developer DELTA of the DNG Dorsten holding company is well on the way to achieving that deadline.

In addition to the conventional project goals in terms of costs and schedule, the project developer is striving for LEED Platinum and WELL Platinum certification for its high-tech logistics center. Sustainability goals for the facility include achieving a positive carbon footprint and being water-positive, that is, producing more water than it uses. A green roof, self-sufficient electricity generation of more than one megawatt and the use of geothermal energy also have a positive effect with regard to the key United Nations Sustainable Development Goals.

Thanks to a sprinkler tank that doubles as a buffer tank, cooling can be provided more efficiently and made available at night if necessary. The client is also using Cradle to Cradle®-certified and other recyclable products.



“The customer and our team had the courage to reimagine the concept of logistics facilities. The Levi Strauss & Co. project shows how well resource conservation and carbon neutrality can be reconciled with a highly efficient, user-centered building.”

Dirk Fischer  
Senior Team Leader at Drees & Sommer

The Drees & Sommer team supported the customer with an extensive range of services from the outset. In addition to project control, the experts undertook all specialist planning services, technical & economic controlling, the functional invitation to tender and contract award for the construction project, and controlling of the general contractor. The client has a direct contact person available at all times for any questions relating to any aspect of the project.

The tight schedule shows it is possible to achieve speed and sustainability: The application for planning approval was ready for submission just three and a half months after the start of the project. Construction started shortly after partial planning permission was granted the end of November 2021. This makes the Levi Strauss & Co. logistics center a true fast-track project.

Whether in Magdeburg, Leipzig, Barleben or Münsterland: The future belongs to energy-efficient, high-performance logistics facilities that are sustainable in every respect. Drees & Sommer helps project developers and companies to achieve future-proof realization of their requirements.





The VINCI headquarters complex L'archipel in Nanterre comprises five different buildings.

# HEALTHY MATERIALS IN THE WORKPLACE

As a consultant for Cradle to Cradle® solutions, Drees & Sommer France supported the VINCI Group with the planning of its new headquarters in the Paris suburb of Nanterre. Almost 4,000 employees of the the concessions, energy and construction company have been working there since the end of 2021 – and benefitting from the healthy materials used in the workplace.

The architects and planners designed the complex of five buildings – which is known as 'L'archipel' (The Archipelago) – to reflect the client's organizational structure: The complex has a total gross floor area of some 75,500 square meters with uses including offices and retail space. L'archipel has its own connection to a new train station called 'Eole', and features about 90 planted terraces and balconies.

The elegant stairway in the „Village“ welcomes employees and visitors to Mona building.



Offices areas are enhanced by their C2C fitout.



“Our greatest success has been convincing developers and contractors to work together to develop the best process and achieve a 30 percent C2C share.”

Michael Moradiellos del Molino,  
Head of Cradle to Cradle® at Drees & Sommer  
Benelux and France

A wide range of professions and the company’s collective entrepreneurial spirit find expression in the interior and exterior design of the L’archipel. The result is a building complex that both showcases the know-how and innovative strength in all divisions of the company and exemplifies the company’s high-quality working environment and commitment to energy efficiency.

The team of experts from Drees & Sommer advised the client from the design phase on, for example on the concrete to be used and on Cradle to Cradle® (C2C) design of workplaces. A key goal was to ensure that some 30 percent of materials used meets the strict C2C criteria for recyclability.

The experts were also able to support the client by setting up a dynamic material library based on the Building Material Scout platform and by drawing up a Building Circularity Passport. The library provides information on all C2C characteristics of the products used, such as how well they can be disassembled and recycled. It also contains detailed information, showing for example exactly what the recovery paths of a product look like. As an additional bonus, the materials retain a precisely quantifiable residual value at the end of their lifecycle.



The project makes a substantial contribution to UN Sustainable Development Goal (SDG) 11. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

Client: VINCI, Nanterre | Project duration: January 2018 – February 2022 | Architecture: Agence VIGUIER, Paris | Associate Architect: Marc Mimram Architecture & Ingénierie, Paris | Drees & Sommer services: Cradle to Cradle consulting, sustainability consulting, material passport | Key project data: GFA: 75,500 m<sup>2</sup>, of which 1,500 m<sup>2</sup> is retail space

# URBAN MINING: KEY TO UNLOCKING URBAN REGENERATION

Careful renewal of existing buildings is required when revitalizing inner city areas and the benefits can be considerable if it is done in an ecologically sustainable way. Drees & Sommer supported a project of this type in Nottingham, England, with concepts and analysis aligned with the circular economy.

The city of Nottingham aims to become the first net-zero city in the United Kingdom by 2028. The new Broadmarsh shopping center forms part of this plan. The background to the project is that ownership of the dilapidated shopping mall was transferred to the city council following a pandemic related insolvency and the council decided to upgrade and revitalize it. Drees & Sommer supported the project in 2021.

This will not only result in a new residential and social environment, but also allow the city council to save resources and energy. Planning is also based on extensive consultation with the local residents. In all, the project will create 6,000 new jobs, 37,000 square meters of retail and office space, and 750 apartments.

Drees & Sommer worked together with experts from EPEA – Part of Drees & Sommer at the Benelux regional office to plan the use of materials from the legacy building for the new shopping center, a process known as urban mining. The potential reduction in carbon emissions over the service life of the building is between 45 and 70 percent compared to the usual approach of demolition and rebuild. This represents a huge step towards a future-oriented construction culture.

The specialists analyzed the materials and assessed the possibilities for their preservation and reuse. The core of the approach is systematic upcycling – which allowed Drees & Sommer to plausibly demonstrate the potential to the customer. As a result, in coming years the project will serve as an inspiring flagship project for a city renewed by the circular economy.



The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 6, 11 and 13. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>



Scan this QR code to access more information on the project.

Client: Greater Broadmarsh Advisory Group, Nottingham City Council | Project duration: Ongoing support in 2021 | Architecture: Heatherwick Studio, London | Drees & Sommer services: Urban mining and strategic circular economy, assessment of existing building fabric, master plan for potential carbon emissions reduction, material recovery planning | Key project data: Total area: 80,940 m<sup>2</sup>, retail and office space: Approx. 37,000 m<sup>2</sup>, workplaces: Approx. 6,000, apartments: 750

“It was pleasure to bring our Cradle to Cradle® and urban mining experience to define Heatherwicks’s inspiring and forward-thinking vision.”

Simon Joe Portal,  
Project Director Sustainability  
at Drees & Sommer UK



# TOP MARKS FOR EXECUTION



Bringing learning environments to life: As a pilot project, the Gotthard-Müller school in Filderstadt ticks all the boxes. Drees & Sommer managed the extensive new construction and remodeling work on the school campus for the city authorities.

The school combines a primary school and a common school, a type of school where students are not divided into different school types and all children are taught together up to the tenth grade. A color concept based on yellow, green and orange provides orientation for the students: Orange identifies areas for the primary school, green for the common school, and yellow the spaces that both schools use. But that is only one aspect of the new Gotthard-Müller primary and common school in Filderstadt-Bernhausen.

The new school building was the main project in the further development of the school campus. Three subprojects included the demolition of an existing school, the renovation of the gym, and the refurbishment of the Fleinsbach secondary school. The city of Filderstadt has invested around 35 million euros in the further development of the school campus. The aim was to upgrade the architecture and adapt it to the requirements of a new educational concept featuring all-day school care.

Drees & Sommer supported the client with a feasibility study and variant analysis when the project was first being considered back in 2015. The team was then awarded a follow-up contract to manage the subsequent architectural competition and planner selection process. The specification for the architectural competition, which was won by Behnisch Architekten, envisaged a new building for the two-tier Gotthard-Müller-Schule primary and common schools, extensions to the Fleinsbachschule (secondary school), a common cafeteria for use by all the schools, all integrated into a single school campus.

Learning and laughter:  
Natural materials ensure  
a feel-good atmosphere.



Round, organic shapes, lots of glass and bright colors foster learning and discovery.

The school campus in Filderstadt is precisely geared to the needs of students of all ages and clearly demonstrates just how good modern learning environments can look.



Natural light falls from above and through large windows into the open-plan interior spaces.

**Client:** City of Filderstadt | **Project duration:** April 2015 – September 2021 | **Architecture:** Behnisch Architekten, Stuttgart | **Drees & Sommer services:** Feasibility study & variant analysis with lifecycle costs, management of architectural competition, selection of specialist planners, project management as per AHO, user coordination, relocation management | **Key project data:** GFA: Approx. 9,500 m<sup>2</sup>



Lots of space and distinct colors: Wheelchair accessibility and inclusion are key design features of the new school campus



## “Cooperative learning in education-oriented architecture: The school campus in Filderstadt sets a new standard for all-day school care!”

Theresa Spörlein,  
Project Leader at Drees & Sommer

When construction started in January 2018, the project managers were responsible for both the construction processes and user coordination. The difficult subsoil, tight schedule and spatial proximity of the building sites posed challenges for all project participants. Work on the new common school had to be undertaken while the school was still in operation, but refurbishment of the Fleinsbachschule could only be undertaken during school holidays.

Sustainability was a key aim of the construction project. The eco-friendly overall concept for the new building, which includes a timber facade and a rooftop photovoltaic system, not only cut construction costs, but will also have a positive long-term impact on energy consumption. The open design of the building, the wheelchair-accessible outdoor facilities and the shared spaces foster inclusion and participation.

The project managers enjoyed close and trusting collaboration with the city's department of public works, the users, and building contractors. The school was able to commence operation in September 2020, on schedule for the start of the new school year. Quality specifications were exceeded and the project was completed more than 11 percent below budget – outstanding results that were achieved thanks to constant coordination and comprehensive project management. Construction work on the new building was completed in May 2020. The remaining preparations and the start of school then took place during the pandemic months that followed.

Representatives from the schools, the state of Baden-Württemberg, the city and other guests celebrated the official inauguration of the new school campus in October 2021. This sustainable and architecturally attractive pilot project shows how inclusion and all-day school care can be harmonized in a learning environment of the future!



The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 4, 10 and 11. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

# SOME LIKE IT HOT: HOT-DIP GALVANIZING LINE FOR THYSSENKRUPP

Thyssenkrupp Steel is modernizing its Dortmund site by adding a state-of-the-art hot-dip galvanizing line to its production facilities. This move is the company's response to increasing demand for high-quality and high-strength strip steel for the automotive industry. Drees & Sommer is supporting the project by providing successful construction and assembly management services.

The new hot-dip galvanizing line makes the Ruhr Europe's largest competence center for hot-dip galvanized strip steel. This project reflects the key role the steel group is playing as the automotive sector transitions to hot-dip galvanized products, and is its response to growing demand from the industry. The new line will produce up to 600,000 tonnes of hot-dip galvanized sheet steel such as body parts and also offer highly innovative zinc-magnesium products. As a result of the low coating thickness, these products conserve materials and cut costs while also being sustainable.

The cutting-edge lines will produce 600,000 tonnes of hot-dip galvanized products per year.





Aiming high: 8,000 tonnes of steel and 24,000 cubic meters of concrete were used in the construction of the line, which reaches heights of up to 65 meters.

Client: Thyssenkrupp Steel Europa AG, Duisburg | Project duration: November 2018 – today | Architecture: Ingenieurgesellschaft Lievens und Partner mbH, Aachen | Drees & Sommer services: Construction and assembly management | Key project data: Costs (net): Approx. €300 million



“This line will make a significant contribution to energy savings as energy-intensive electrolytically galvanized strip is progressively replaced.”

Klaus Martin,  
Team Leader at Drees & Sommer

The Drees & Sommer experts undertook management of construction and line assembly. It is the second line of its kind in Dortmund – and the tenth in the Group. The team also provided construction cost management, dimension monitoring and claim management services. In addition, they took on numerous additional tasks to relieve the customer’s project management team.

Due to time constraints in the construction process, construction and assembly work were undertaken in parallel. This made coordination and work safety on site extremely challenging.

Through professional reconciliation and coordination combined with transparent presentation of construction site processes, the experienced Drees & Sommer experts successfully counteracted conflicts of interest and ensured adherence to the tight schedule. Costs for additional claims were also kept low thanks to extensive verification measures undertaken by Drees & Sommer.

As a result, the team has so far fully met expectations as it supports Thyssenkrupp Steel on its way to future-oriented production facilities with its new hot-dip galvanizing line.



The project makes a substantial contribution to UN Sustainable Development Goal (SDG) 9. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>



The hot-dip galvanizing line in Dortmund is 375 meters long.

# REGULAR AS CLOCKWORK

The energy-efficiency refurbishment of almost 600 apartments in Aarau, Switzerland requires central planning and construction skills: Cost certainty, speed and an eye for future-proof solutions. Drees & Sommer refurbishment specialists will be supporting the project into 2023.

Exciting perspective: Parallel to the construction process, the project is accompanied by drone.



Client: AXA Anlagestiftung, Winterthur | Project duration: Planning: March 2016 – December 2020, Execution: February 2020 – April 2023 | Architecture: Meili, Peter & Partner Architekten AG, Zurich | Drees & Sommer services: General planning, client consulting, scheduling, cost controlling, construction management, LCM®, construction logistics planning, risk monitoring, quality assurance | Key project data: GFA: Approx. 61,000 m², Buildings: 24, Apartments: 581, Residents: Approx. 1,000, Underground parking spaces: 650



“The special challenge is undertaking the renovation work while the apartments are still tenanted.”

Julian Kommer, Project Leader  
at Drees & Sommer in Switzerland

The project makes a substantial contribution to UN Sustainable Development Goal (SDG) 11. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>



Built in the 1970s and 1980s, the Telli high-rise apartment blocks form a huge precinct. It consists of four large buildings with almost 2,500 residents. B and C blocks are owned by the AXA Anlagenstiftung. They are part of the renovation project and comprise 24 sections. So undertaking an energy upgrade of the building complex to get the properties fit for the 21st century represents a huge challenge for the owner.

Planning started back in 2017 and the renovations, which began in February 2020, are scheduled to be completed in April 2023. Impressive progress had already been made after just one year: Various stairwells, elevators and underground car parks have already been renovated and many lobby areas have taken on a new lease of life. And work on B block has been completed. The team has been able to meet or beat all cost and schedule goals.

The contract for energy upgrade of the heritage-protected building complex was awarded to a planning consortium comprising Drees & Sommer Switzerland and ‘Architekten Meili, Peter & Partner’. The goal was to retain the design and quality of the buildings while at the same time bringing them into line with current energy and safety standards.

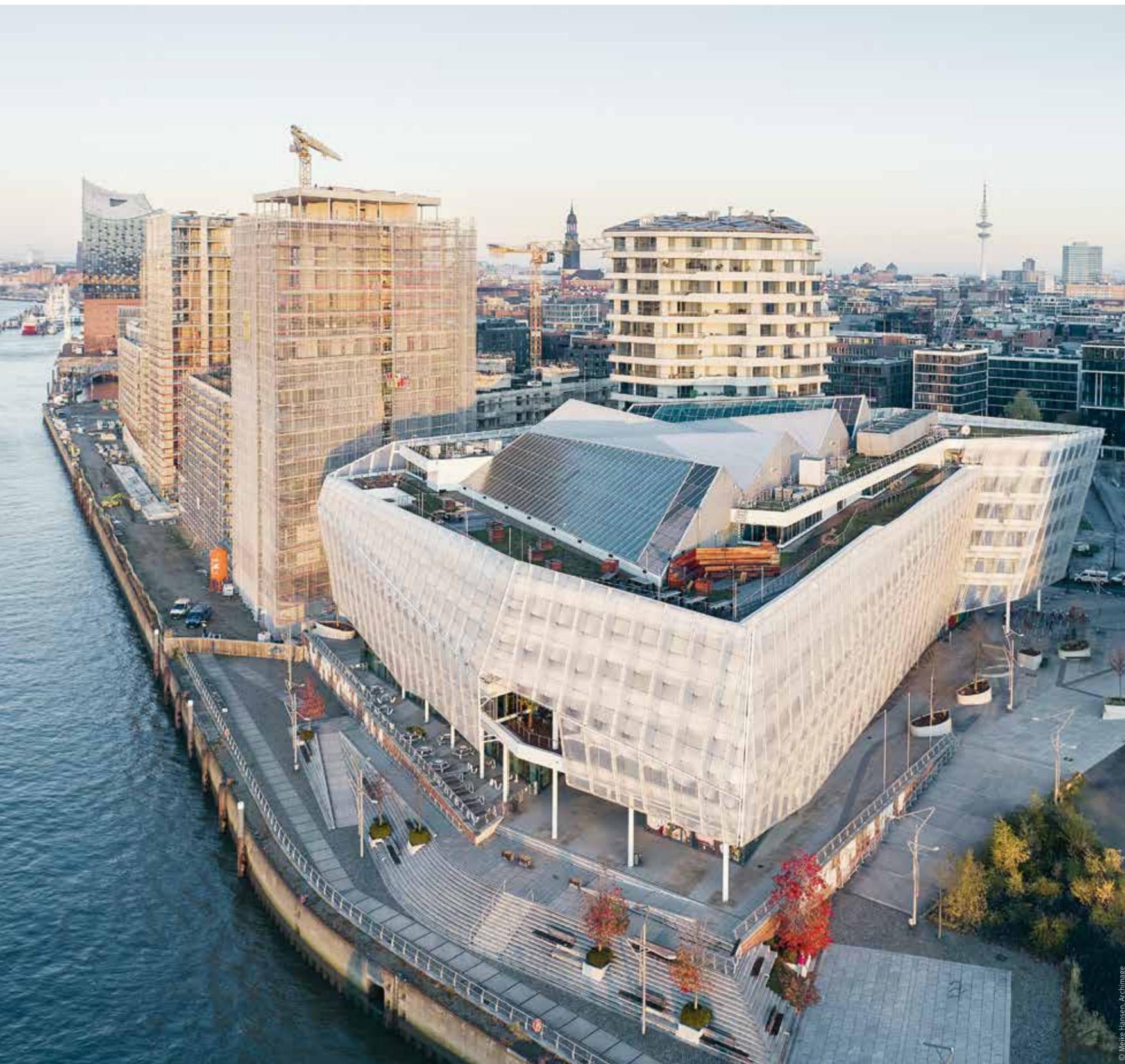
Drees & Sommer is acting as general planner for the project and providing overall management and construction management services. The company is also using Lean Construction Management (LCM®) to ensure smooth and efficient processes and adherence to the project timeline.

In addition to a completely new building envelope that includes roofs, windows and ventilation in the apartments, new fire doors will enhance the safety of the buildings. The project also includes renovation of the elevators and stairwells and redesign of the lobby areas. 1,200 doors, 1,800 new facade elements and 9.5 kilometers of balcony railing are being installed – these numbers give some idea of the scope of the project and the planning required.

The team is relying on a high level of prefabrication and modular construction to ensure adherence to the tight scheduling required for a project being undertaken while apartments are occupied. One advantage is that tenants only have to vacate their apartments for around two weeks and can then return.



NEW WORK Harbour is the hub for encounters between employees and guests. Located on the Strandkai ('Beach Quay'), it offers sweeping views of the River Elbe.



# NEW OFFICE HOME – BECAUSE THERE’S NO PLACE LIKE HOME!

Do you like the idea of winding down in the evenings in the in-house local pub and playing drums during your lunch break? That’s what life looks like in NEW WORK’s Harbour building, which adopts an ‘office home’ rather than a home office approach. The former Unilever building in Hamburg’s Hafencity has been converted into a new office environment for the 900-odd employees of NEW WORK SE (formerly XING SE), allowing offices at various locations to be consolidated in a prestigious headquarters building.



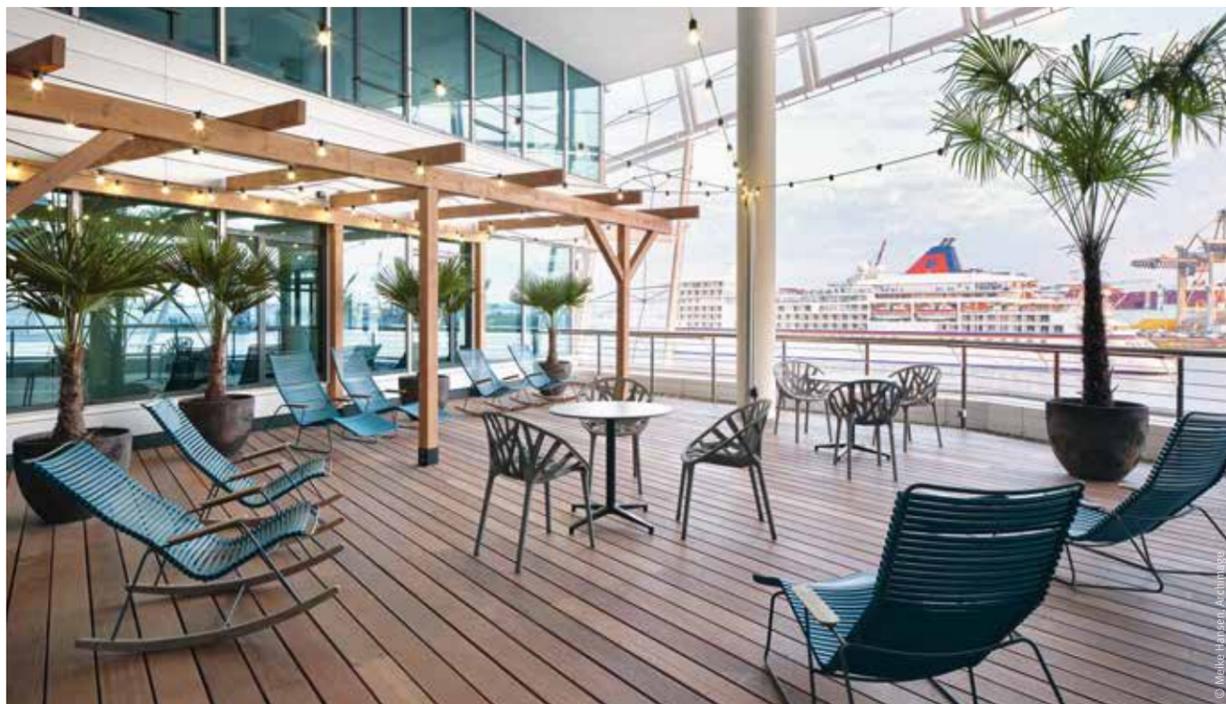
The NEW WORK Pier is a multipurpose area that can be used for coworking or for events.



The office landscape offers a range of different work environments, and each conference room is furnished differently, meeting users' needs and providing variety in everyday work.

Client: NEW WORK SE, formerly XING SE, Hamburg | Project duration: January 2020 – November 2021 | Architecture: Schnittger Architekten + Partner, Kiel | Drees & Sommer services: Project management, project lead function, technical and economic construction consulting, UX | Key project data: GFA: 23,414 m<sup>2</sup>

The Sun Deck shows the high level of employee participation in the project. The Beach Club concept was developed by the staff themselves.



With over 1,000 LPs, the Sound Bar enables employees to choose the optimal musical accompaniment for their working day.

The challenging conditions of the coronavirus pandemic made it necessary to develop a new strategy for the future work environment at NEW WORK. As more and more people switched to the home office, the amount of free office space increased. So it was time to move away from old-fashioned open-plan offices and towards modern and flexible creative spaces and project rooms.



“The NEW WORK Harbour is not only a prime example of successful employee participation, but also sets standards for the ‘office home’ concept for future work environments.”

Tristan Schmedes,  
Senior Project Manager at Drees & Sommer

With the conversion and refurbishment work completed, the modular and flexible furniture allows all the various environments to be customized. Those needing space for creative work can find a suitable project room. And there are soundproof booths for confidential phone calls. State-of-the-art media technology is available for video conferencing, making it easier to hold digital and hybrid events. The office also now features a library, a fireside lounge and a prayer room, as well as plenty of opportunities for recuperation during breaks. Another highlight is the extensive roof-top terrace – ideal for open-air yoga and offering employees breathtaking views of the city and harbour.



The project makes a substantial contribution to UN Sustainable Development Goal (SDG) 12. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

The Drees & Sommer construction and work environment experts reduced the client's workload by undertaking full-service management of the LEED-certified project. They also managed commissioning and – through successful schedule management and cost planning – ensured that the project was completed significantly under budget.

# THE FUTURE BIOTECHNOLOGY MARKET – A HEALTHY INVESTMENT

The new biotech building for the global pharmaceutical company Teva is taking shape: The project has been in the final phase since spring 2022.



Systematic complexity: Installation of the biotechnological pharmaceuticals production facility.

Client: TEVA Biotech GmbH, Ulm | Architecture: Wood (Amec Foster Wheeler Italia) with Milan office as EPCM contractor | Drees & Sommer services: 360-degree analysis, overall TEVA construction, construction management, site management representing the client to EPCM contractor, anti-claim management, negotiation of construction time extension with EPCM contractor and contractors, fire protection, cleanroom and facade expertise, Project Communications System, data management | Key project data: Area of site: GFA: Approx. 45,000 m<sup>2</sup>



“We are delighted with the technical support provided by the Drees & Sommer Life Sciences experts.”

Bernd Hägele,  
TEVA Project Lead, VP and BSMO  
business partner Biotech

With a height of 36.5 meters and a floor area of some 4,700 square meters, the new building will not only create 300 jobs in Ulm, but also produce complex biotechnological active ingredients. As the global market leader in generics, this investment reflects Teva's increasing focus on the field of biotechnological pharmaceuticals.

Drees & Sommer supported the company in its goal of speeding up the project. As the team only joined the project during the execution phase, they had a lot to do, including finalizing planning 'on-the-job'.

The experts started by undertaking a 360-degree analysis and then took over overall construction management during the course of the project. Although the EPCM contractor was in charge of construction, the Drees & Sommer team contributed significantly to reducing the customer's workload in the area of managing the construction processes as well as coordinating the entire TEVA team during the execution phase.

The project presented a range of challenges: It involved a highly complex biotechnology production facility with two production lines and the highest possible degree of automation. And sophisticated logistical requirements had to be met under cramped construction site conditions. “An international project of this scope requires simple, creative solutions to cope with the complexities,” says Marc Porath, Team Leader at Drees & Sommer.

The Drees & Sommer experts' recipe for success: Many years' experience with sensitive life sciences projects, international know-how and enduring motivation. Together, these factors allowed them to ensure the smoothest possible communication during project execution by bridging the project participants' German and international cultures and overcoming language barriers. Through their continuous presence on site, they contributed to conflict resolution and fostered successful cooperation.



The project makes a substantial contribution to UN Sustainable Development Goals (SDGs) 3, 5, 9 and 17. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

# CERTIFIED SMARTS: THE CAMPUS FOR THE DIGITAL GENERATION

The Hammerbrooklyn.DigitalCampus is a landmark innovative work environment. Drees & Sommer advised on digitization, as well as project and construction management, Technical and Economic Construction Consulting, and coordination of the tenant fitout.

The Hammerbrooklyn.DigitalCampus in Hamburg is a place for interdisciplinary collaboration and learning among among the business and scientific communities and the general public. Two buildings with a total usable area of about 10,400 square meters are being built on the campus. By 2027, the 'Campus of Solutions' will add a further 40,000 square meters. The partner for the realization of the future-oriented campus is the project developer Art-Invest Real Estate, which, as a founding partner, is undertaking planning, project development and investment.





From digital to real: Hammerbrooklyn.DigitalCampus in 'Hamburger Stadtdeich' redefines modern work in a historical setting.



“Correct use of technologies in buildings leads to greater user-friendliness. In the case of Hammerbrooklyn, we have implemented the digitization requirements in consultation with the future Digital Pavilion users and the project company in the form of digitization modules that truly harmonize with each other.”

Klaus Dederichs,  
Head of ICT at Drees & Sommer

The Digital Pavilion is the center of the campus. The framework of the building is from the former American pavilion at the World Expo 2015. It was transported from Milan to Germany during the first phase of the project. The steel structure and the prefabricated wooden ceiling elements from the original pavilion were reconditioned and mounted – with some additional parts – on a base storey built in Hamburg. The challenge was to harmonize the character of the existing building with the specifications for a modern office and event building. In addition to innovative workplaces, training and function rooms, the Digital Pavilion has space for retail and food & beverage outlets, and studios. The Solution Building, a second building featuring stacked wood construction, has areas for coworking, meetings, a café, storage and rental space, and a roof garden.

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Client: Art-Invest Real Estate GmbH, Cologne / Hammerbrooklyn Immobilien GmbH, Hamburg |  
Project duration: October 2017 – May 2022 | Architecture: Spine Architects, Hamburg |  
Drees & Sommer services: Project control, Technical and Economic Construction Consulting, digitization, construction management, coordination of tenant fitout, site supervision |  
Key project data: Usable floor space: Total: Over 60,000 m<sup>2</sup>, Digital Pavilion: approx. 7,300 m<sup>2</sup>

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In keeping with the digital character of the campus, the Pavilion is designed as a Customized Smart Building. This means that it is precisely tailored to the users' needs. The Drees & Sommer digitization experts worked with the users and the operator in the initial stage of the project to develop a smart digitization strategy, and then designed the building accordingly. For example, thanks to the integrated artificial intelligence (the so-called 'Brain') and tracking sensors, the Pavilion only uses as much energy as is necessary for the number of people present at any given time.

In 2021, WiredScore awarded the Digital Pavilion the new SmartScore Smart Building Platinum certification, the highest award level for a building in Germany. With a score of 100 percent, the Pavilion is currently the smartest certified building in the world. This rating shows that – with the right digitization strategy – a legacy building can be upgraded to a world-leading Customized Smart Building.

# NEW WORK ENVIRONMENT FOR BEIERSDORF

Client: Beiersdorf AG, Basel | Project duration: January 2021 – December 2021 | Drees & Sommer services: Client representation including client consulting, facilitation of communication between the project participants, quality assurance, support during tendering, cost monitoring, schedule management, ensuring delivery of documentation by the general planner (GP)/sole contractor (SC), SC monitoring during the execution phase | Key project data: Floor area approx. 900 m<sup>2</sup>

Remodeling and relocation: Beiersdorf AG planned the relocation and the changeover to a flexible workplace concept of the offices of its Swiss branch in Basel in 2021. Drees & Sommer supported the life sciences company and represented the client in dealings with the general planner and the sole contractor.

Imagine climbing into a decommissioned ski lift cabin for a meeting or sitting in a hanging chair to read up on a new topic? The new 900 square meter work environment created for Beiersdorf AG in Basel's city center combines both the corporate style guide and the specificity of the local office in the design. The question was how to design office space that is attractive even at a time when people are working from home and that fosters cooperation between employees while also allowing opportunities for people to withdraw to concentrate?

This bright corner with a view towards the station – a perfect place to hold a conversation.





The kitchen offers plenty of space to eat together and have a chat.



The hanging chair is a place to relax in privacy.



The coffee corners are a popular places for a chat.

Beiersdorf's Basel branch office chose a flexible workplace concept.



## “The new Basel office is one of the first Beiersdorf offices to be converted into a dynamic work environment.”

Florentin Zellweger,  
Project Leader at  
Drees & Sommer in Switzerland

Beiersdorf commissioned a sole contractor to undertake the work. Drees & Sommer contributed to the success of the project in its role as client representative. From the outset, the team established a lean organization – and the use of goal-oriented tools including for scheduling, cost and invoice control, digital task management and logging, and change management. By reviewing the sole contractor's execution planning, the experts were able to identify risks at an early stage, avoid major defects in the subsequent execution, and improve quality.

And the team's expertise allowed them to advise the client on both technical and design aspects of the project. It also facilitated the high level of coordination between the client, the design team and the sole contractor. The excellent cooperation between all parties involved and the partnership between Drees & Sommer and the client's team were key factors in the project's success. Despite the high-quality fitout, the project remained within budget and the Beiersdorf employees were able to move into their remodeled offices on schedule at the end of August 2021.



The project makes a substantial contribution to UN Sustainable Development Goal (SDG) 3. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

Following the successful project in Basel, the same high-quality office design – based on New Work principles and meeting the new Beiersdorf Corporate Identity requirements – is to be rolled out at offices worldwide.

# NEW GLOBAL HEADQUARTERS FOR CONSUMER DIVISION OF FREUDENBERG FILTRATION TECHNOLOGY



Client: Consumer Division of Freudenberg Filtration Technology, Foshan City |  
 Project duration: August 2019 – September 2021 | Architecture: ARTS Group Co. Ltd, Suzhou, China |  
 Drees & Sommer services: Key services: Program management, overall schedule coordination, total cost/budget control, administration of variation contracts, management of user requirements, PCS online storage, relocation support, invitation to tender for facility management provider, photovoltaics project consulting | Key project data: GFA: 65,000 m<sup>2</sup>, Cost (net): RMB 300 m.

After a construction period of around two years, Freudenberg celebrated the opening of its new plant in southern China. Drees & Sommer supported the project throughout the entire period, including successful commissioning.

Freudenberg Apollo is a leading supplier of air and water filtration products. These can effectively filter (ultra)fine particulate, harmful gases, odours, and microorganisms in air and drinking water as a health protection measure. In 2019, Freudenberg Apollo decided to invest in a new plant in Shunde district, Foshan.

Drees & Sommer Shanghai was commissioned as program manager and was therefore responsible for internal coordination between the client's real estate consulting division in Germany, the local team and various users throughout the entire construction process. Acting as the interface, they ensured a good working atmosphere and smooth cooperation between the various parties involved.

At the start of the project, the Drees & Sommer team held workshops to ensure that user requirements were clearly defined and integrated into the design. The collection and definition of these requirements was a key step towards ensuring that all process requirements were included in construction planning and subsequently implemented during construction.

The team was also able to generate additional orders, assisting the customer with relocation management and organizing the tender for a facility management provider.

Despite optimal coordination, the experts encountered unexpected challenges: The coronavirus pandemic caused delays for several weeks. Thanks to a catch-up plan and detailed schedules, the Drees & Sommer team was nevertheless able to help the customer adhere to the schedule. The Shanghai colleagues were thus able to bring the project to a successful conclusion. The relocation also went smoothly, enabling employees to commission the new factory in summer 2021.

# LIVING AND WORKING IN A MODERN ENVIRONMENT

SV SparkassenVersicherung has built a complex comprising a residential and an office building in Mannheim. Despite the tight schedule and the challenge of coordinating the various user and stakeholder groups, Drees & Sommer guided the project to a successful conclusion using the Planning and Construction execution model.

The building complex in the Glückstein district in Mannheim comprises a twelve-storey office building and an apartment building with 77 units. SV SparkassenVersicherung uses a large part of the office space for its local employees.

The client acquired the property as part of a forward contract in July 2017. Drees & Sommer supported SV SparkassenVersicherung throughout the entire process: The experts helped with the site search and selection of a suitable construction partner and subsequently provided comprehensive management services for the construction project right through to the move-in.



Client: SV SparkassenVersicherung, Mannheim | Project duration: December 2015 – July 2021 | Architecture: Sacker Architekten, Freiburg | General contractor/project developer: Diringen und Scheidel, Mannheim | Drees & Sommer services: Assessment of the existing site, analysis and development of alternatives, recommendation regarding Planning and Construction execution model, project management, user project management | Key project data: GFA: 37,143 m<sup>2</sup>, customer employees on site: 600



SV SparkassenVersicherung customers are welcomed by a bright and friendly waiting area.



“We provided SV SparkassenVersicherung with seamless, comprehensive support throughout the entire process from analysis of the previous site and selection of the new site and the suitable building construction partner all the way through to the move-in.”

Jochen Günther  
Associate Partner at Drees & Sommer

In the course of numerous intensive workshops with the users, the Drees & Sommer specialists defined the project requirements as part of the Planning and Construction service. They then coordinated the results with the project developer and the customer's decision-makers and drew up a Functional Specification based on the outcomes.

After the customer had signed the purchase contract for the property and the new building, Drees & Sommer was commissioned to provide further services. In addition to project management at management level via the interface to the project developer and marketing, the team undertook user project management for the entire project. Drees & Sommer coordinated the numerous project participants, including the various SV user subproject managers, members of the works council and specialists for occupational health and safety. The key challenge was the tight schedule, as the existing building could only be operated for a short time due to inadequate fire protection measures.

The client was delighted with the team's performance as intermediary and coordinator at the interface between the construction contractor and users, and with the successful conclusion of the project. The new building provides SV employees with a flexible office concept adapted to the requirements of future work. The building also features modern food and beverage areas on the ground floor and a conference center. With this project, Drees & Sommer also successfully continued its long-standing relationship with SV SparkassenVersicherung.



Employees can hold short meetings in a relaxed environment.

Floor-to-ceiling windows in the bright offices open up views of the landscaped courtyard.



The project makes a substantial contribution to UN Sustainable Development Goal (SDG) 11. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>



“LCM<sup>®</sup> improves communication and cooperation between project participants and presents the schedule clearly. This facilitates proactive scheduling and execution.”

Tobias Leichtle, Project Manager at Drees & Sommer



The project makes a substantial contribution to UN Sustainable Development Goal (SDG) 3. For an overview of the United Nations SDGs visit <https://sdgs.un.org/goals>

# LEADING-EDGE RESEARCH IN ULM

A research center for Multidimensional Trauma Sciences (MTS) is being built on the Ulm University Hospital campus. Drees & Sommer construction management experts are supporting the project.

A new center for trauma research costing around €73 million (including equipment) is being built at the Ulm University Hospital: From 2024, medical and natural science researchers will be able to pool their expertise on the five floors of the new MTS building. The researchers will then have highly specialized biomedical laboratories, a biobank (a collection of tissue samples), and a clinical study center all available on campus.

A special feature of trauma research in Ulm is the close cooperation between disciplines as diverse as trauma surgery, internal medicine, biochemistry, genetics and psychiatry. This collaboration will be reflected in the design of the MTS building, for example in the form of special areas for interdisciplinary exchange.

Healthcare and construction management specialists from Drees & Sommer have been commissioned to provide site supervision services for the new project. They will use Lean Site Management (LSM) to help ensure stable and transparent planning and execution processes for all project participants, along with an optimal construction process.

The company is using digitization tools for defect management and scheduling, as well as for Lean Construction Management (LCM<sup>®</sup>) and building documentation. This has allowed Drees & Sommer to master the special technical and design requirements and adhere to the tight schedule. This approach is essential given that the building needs to be precisely tailored to researchers' needs and utmost precision is required during implementation because of the highly sensitive nature of the work.

Construction began in March 2021. The project participants expect the completion of the new MTS building in 2024.

**Principal:** Baden-Württemberg State Office of Property and Construction, Ulm office | **Client:** Heinle, Wischer und Partner (HWP), Stuttgart | **Project duration:** January 2021 – Juni 2024 | **Architects:** Heinle, Wischer und Partner (HWP), Stuttgart | **Drees & Sommer services:** Site supervision | **Key project data:** GFA: 5,400 m<sup>2</sup>, planning and construction costs: Approx. €65,5 million



# 25HOURS HOTEL IN FLORENCE OPENS ON TIME FOR ITS GUESTS

‘Heavenly relaxed, hellishly amusing’ – this is the slogan used to advertise the 25hours Hotel Piazza San Paolino in Florence. The hotel’s design was created in the style of ‘Paradise meets Inferno’, inspired by Dante Alighieri’s Divine Comedy (La Divina Comedia).

Left: Shades of green and blue symbolize the heavenly relaxation in contrast to the inferno atmosphere.

Right: The ‘San Paolino’ restaurant is located under a large glass dome. The green courtyard garden invites you to dream.



With fiery red, completely in the inferno style, the „Large Room“ even offers access to its own garden.



Client: Art-Invest Real Estate Management GmbH & Co. KG | Project duration: February 2018 – September 2021 | Architecture: Building: Genius Loci Architettura, Florence/Milan; Interior Design: Paola Navone | Drees & Sommer services: Technical supervision, hotel-specific consulting, claim management, time, cost and quality control | Key project data: GFA: 10,750 m<sup>2</sup>, Investment costs (net): > €100m.



With its warm atmosphere, the inner courtyard ensures lovely encounters, especially in the evening hours.

Intense red tones emphasize the „hellish“ design.



In September 2021, the hotel opened in the center of Florence's historic downtown. Scenes from Paradise and Hell come to the fore over depictions of virtue and vice through Dante's world. The centerpiece of the hotel is the San Paolino restaurant, located under a huge glass dome. Relaxation is promised by a green courtyard garden. There is also a cocktail bar, a lively piazza, and a grocery store for the entire neighborhood.



“The difficult construction logistics in the middle of the narrow city center, the protection of historical monuments, archaeological and anthropological finds ensured that it remained exciting! We are proud to be part of the success.”

Ambra Francisci,  
Project Leader at Drees & Sommer in Italy

In addition to the construction of a new building, the project also included the renovation of the existing historic building. A particular challenge was the location of the construction site in the historic center of Florence. In addition archaeological finds during the civil engineering work delayed progress.

Drees & Sommer undertook technical supervision of this project and supported the client with its hospitality expertise. The experts created maximum transparency for the client with monthly site inspections and reports. There was also a need for coordination, particularly with Unicredit Bank as the financing financial institution.

Drees & Sommer Italy was able to convince the client with a combination of on-site knowledge, technical expertise and intercultural competence – and thus made a major contribution to the success of the project.

**Art-Invest Real Estate Management** in Florence was thus able to meet the set goals in terms of time, costs and quality.

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Drees & Sommer operates internationally, and its clients benefit from its global presence. At 51 offices, our experts support both German and international companies from a range of industries in the realization of their projects. In addition, Drees & Sommer has temporary project offices all over the world – wherever you currently need us.

[www.dreso.com/locations](http://www.dreso.com/locations)



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